The Journal of the
American Medical Association

VOL. XXX. CHICAGO, ILLINOIS, MARCH 5, 1898. No. 10.

ORIGINAL ARTICLES.

GASTROTOMY FOR THE REMOVAL OF FOREIGN BODIES IN THE STOMACH.

WITH REPORT OF A CASE, AND A TABLE OF REPORTED CASES OPERATED ON UP TO THE PRESENT TIME.

Read before the Missouri State Medical Association, at St. Louis, Mo., May 19, 1897.

BY A. H. MEISENBACH, M.D.

PROFESSOR OF SURGERY IN THE MARION SIMS COLLEGE OF MEDICINE, ST. LOUIS, MO.

INTRODUCTION.

Although gastrotomy for the removal of foreign bodies was performed as early as 1602, it is remarkable to note that from 1602 to 1887, a period of 285 years, only thirty-five cases have been reported as operated on. Many cases of foreign bodies in the stomach, no doubt, were not operated on, and perhaps some have been operated on of which no reports have been made. From 1887 to date twenty-two cases have been reported. Gastrotomy, even in the pre-antiseptic and aseptic period, was a comparatively safe operation, only five out of the thirty-five cases operated on prior to 1887 having proved fatal.

The patients on whom this operation was done were usually either lunatics, or fakirs who swallowed the objects for money.

The indications for the performance of gastrotomy for the removal of foreign bodies in the stomach are: 1, the presence of a body that, on account of its size or form, can not pass through the intestines; 2, the presence of urgent symptoms in the patient.

Foreign bodies may remain in the stomach for a long time without causing serious disturbances, and in some cases their presence may not be known (as in lunatics) until discovered after death by post-mortem. In this respect the form, size, number and weight of the body play an important rôle. Long bodies, such as knives, table forks, spoons, pencils and bars of metal, usually remain in the stomach and give rise to serious symptoms on account of their weight and form. In cases where small objects are swallowed repeatedly their aggregation will eventually, by their weight, favor an accumulation in the stomach and finally may give rise to serious symptoms, producing dilatation of the stomach and local inflammation, adhesions or perforations. That the long continued presence of foreign bodies in the stomach, although tolerated, perhaps, for a long time, will eventually give rise to disturbance of nutrition and other local conditions seems reasonable. There may be symptoms of a catarrhal condition of the stomach, pains in the pit of the stomach and shifting from one spot to another, often influenced by the posture of the patient. When foreign bodies set up subjective conditions that are progressive in character the patient ultimately grows pale and thin; there may be vomiting, hemorrhage and extreme wasting, eventually ending in exhaustion and death. Where the presence of foreign bodies in the stomach can be established the sooner they are removed the better will be the prognosis, no matter what the character of the body may be.

To the cases that have been reported I have the honor to add the following, which came under my care and observation March 30, 1897. The patient termed himself "The Human Ostrich," and had followed the profession of swallowing glass, metal, etc., for a period of nine years. He presented himself at my clinic, giving the following history:

HISTORY OF THE CASE.

The patient, L. W., "Signor Ranana," aged 22, has the following history:

Family history.—Father and mother living and of very nervous temperament. One living sister.

Previous history.—Patient received a very fair education, attended public high school and college and was within one and one-half years of graduation when he left school. While still at school he witnessed, in March, 1888, an exhibition by a professional glass eater. He paid the "Signor" ten dollars to teach him the art of glass-eating. After experimenting for a few days he found he could perform the same feats. At first he gave private exhibitions. He took great interest in swallowing other objects, such as nails, and practiced sword swallowing also. In 1894 he joined a specialty company. At this time he practiced needle and pin sticking (perforating the skin with needles or pins). Since 1894 he has been continually giving private and public exhibitions, at least one or two a week. He does not remember the quantities swallowed. In the early part of March, 1897, he started out on a trip, and on account of scarcity of funds was obliged to give as many as six to twelve exhibitions daily, in saloons and elsewhere, but he did not swallow much at a time, only a bite or two of glass, four or five nails, screws or cartridges, or a few fence staples. He always carried a supply of the objects, so as to be able to give an exhibition of swallowing at any time. In his repertoire were pearl-top lamp chimneys, two-, four-, six- and eight-penny wire fence nails, barbed wire fence staples, and thirty-two and thirty-eight caliber cartridges. He never swallowed tacks.

The patient states that up to 1897 he never had any trouble. He never was sick, nor did he have any trouble with his bowels. On March 15 he gave a number of exhibitions, and on March 16 a "lump in the stomach" and the first pains were noticed. On March 18 the last object was swallowed, a thirty-two caliber cartridge. He came to St. Louis to seek relief, feeling that he was beginning to get into a serious condition.

Present condition.—The patient is 6 ft. 1 inch in height, weighs 153 pounds, has hazel eyes and curly brown hair. His color is pale, gums spongy and breath very foul. He complains of a weight in his stomach, but has no other pains. His pulse is 76, temperature 98 degrees and respirations 23.

Physical examination.—Patient stripped to the waist. Inspection in both upright and recumbent position reveals nothing abnormal. In proportion to his height he ought to be more fleshy.

Palpation and percussion with patient standing upright, body inclined forward, mouth open and abdominal muscles relaxed. In this position palpation and ballottement reveal distinctly a mass situated in the umbilical and hypogastric regions. The mass (tumor) can be raised, and in descent a distinct impulse is felt against the fingers. The mass is about the size of an ordinary hand.

Palpation and percussion with patient reclining on his back

reveals a mass in the umbilical region. Deep pressure clearly outlines the same. Changing the position so that he lies on his right side the mass shifts its position to the right hypochondriac and lumbar regions, and can be clearly defined by palpation. Turning the patient on his left side the mass shifts to the left hypochondriac and lumbar regions. Placing the patient on his back again the mass returns to the umbilical region, and occupies the same position when he arises to his feet.

The manipulations were not associated with any degree of pain, only when deep pressure was practiced the patient would admonish the manipulator to be gentle; it hurt him.

Remarks. — The physical examination alone was sufficient to establish the diagnosis of foreign bodies in the stomach. The patient was willing to have an operation performed, and so was admitted at once (March 30) to the Rebekah Hospital for observation and preparation for the operation. He was placed on liquid diet and orders left to look after the bowels and stools.

The question whether the foreign bodies were located in the stomach or elsewhere was a very important one from an operative and prognostic standpoint. That they were in the stomach was demonstrated to my mind by the constancy of the position of the mass and the position that it occupied. The previous history of the patient was also a valuable point in determining this. The points on which this diagnosis was based were:

1, the position of the mass when the patient was placed in the upright position; 2, the position of the mass when the patient was reclining on his back; 3, the position of the mass when the patient was reclining on his right or left side; 4, the previous history of the patient.

1. The position of the mass when the patient was on his feet or lying on his back. Palpation and percussion demonstrated that it was mostly in the umbilical, but partly in the lumbar region. The mass being a large one and composed, as it was, of heavy objects, the *raison d'être* naturally would be that such a mass would in time have its effect on the stomach and produce dilatation of that part with which it was in contact; gravitating toward the lowest point, this being some part of the greater curvature. Gravitation and dilatation would explain its position in these regions. The only other position that the mass might have occupied would be in some part of the large or small intestine. But this supposition becomes untenable when we critically analyze the possibilities. If the mass had accumulated in the small bowel there would have been symptoms of obstruction and previous history of pain, possibly inflammation. Also, the tumor would not have been as constant in position unless surrounded by inflammatory adhesions that would make a solid, immovable mass. The same would be true of the colon; if in the cecum, we would certainly have had a train of symptoms of either obstruction or inflammation; if in the transverse colon, the position would have been lower. The only other part of the colon would have been the sigmoid or rectum, in either of which the symptoms of obstruction or inflammatory reaction would have been prominent.

2 and 3. Positon of mass when patient reclined on left or right side. The constancy with which the mass would shift to the left or right side and return to the median line when the patient was on his back was a strong argument in favor of its location in the stomach. No other location could explain the constancy of position in either region when the patient lay on either side.

4. Previous history of the patient. In establishing a diagnosis this is of the utmost importance. Such a mass accumulated anywhere else in the gastro-intestinal tract would very soon have given rise to very serious symptoms, either of inflammation or obstruction.

Being so firmly convinced that the foreign bodies were located in the stomach, as determined above, other corroborative testimony was hardly necessary. My diagnosis was concurred in by Professors Lemen, Crandall, Bond and others who saw the case afterward. I might have passed a metallic sound into the stomach, passing an electric current through it, but I did not want to do anything that might injure the parts, which might have been done by probing or the reflex vomiting excited by it. However, on April 5 the stomach was inflated with air, so as to more clearly outline its lower border. It was found below the umbilicus, as had already been demonstrated. It was decided, however, to demonstrate, if possible, the presence of the mass by means of the X-rays.

X-RAY EXPERIMENTS.

On Friday evening, April 2, the experiments with the X-rays were made. The apparatus was Thomson's high tension coil 6 inch spark, and was in charge of Dr. Ernest Rubel of the St. Louis Electric Supply Co. The apparatus worked admirably. The fluoroscope was used first. By it the mass could be outlined as a dark spot about four to five inches in diameter. The patient was placed in a standing position with his back to the tube. The position of the mass was the same as revealed in the physical examination, viz., principally in the umbilical region.

A 14 x 17 Cramer, Banner plate, properly wrapped, was placed on a table on which the patient was laid. The plate was so placed that in its area was comprised the abdominal cavity, part of the pelvis and thorax. The exposure was one hour in duration.[1] The X-rays were so powerful that at a distance of six or eight feet from the tube, and on its side or behind it, the fluoroscope showed the skeleton of the hand distinctly. The tube was placed over the abdomen with its long axis parallel with the axis of the body, the center of the tube about over the location of the mass. The distance of the tube from the body was twelve inches; time of exposure for first plate, one hour; second plate, forty minutes.

The plates when developed did not give as good a shadowgraph as was desired. The lumbar spine and the lower part of the thorax were faintly outlined. There was a shadow marking the site of the tumor which, although not as clearly defined as desirable, yet to the practiced eye demonstrated the presence of some foreign body. This shadow was situated a little to the right of the spinal column and in the umbilical region.

Not satisfied with these plates, further exposures were made, the last on Monday evening, April 6, the evening before the operation. Three exposures were made, ranging from thirty-seven to forty minutes each. On development of the plates it was found that the plates of the first exposure were the best, the one exposed one hour being the best of all. The total time during which the patient was exposed to the X-rays at the various sittings, was nearly five hours.

OPERATION (GASTROTOMY).

April 7, 3 P.M., at the Rebekah Hospital, in the

[1] Since the above experiments were made improved methods of technique have made it possible to shorten the exposures to one-half or one-fourth of the above time.

presence of a number of visiting members of the Tri-State Medical Association, and assisted by Drs. Born, Dorsey and others, I performed gastrotomy.

One-half hour previous to the operation the stomach was washed out with a Pasteurine solution. The anesthetic was chloroform.

Incision from the xiphoid to umbilicus was made in the median line, and anterior wall of the stomach presented in the depths of the wound. It was noticed that the stomach was dragged down considerably, so that the superior curvature presented at about the middle of the incision. Introducing my hand into the abdominal cavity I could feel the mass situated below the umbilicus and to the right of the spinal column. The mass was situated nearer to the pyloric end and this part of the stomach was sacculated. Pulling gently on the anterior wall, I was able to draw the stomach out of the abdominal wound to such an extent as to bring the mass into the bottom of the wound area. Grasping the stomach wall with two small, short bullet-forceps, midway between the greater and lesser curvature in the axis of the organ, I made an incision between the forceps into the "cavum" with a knife, the forceps being held by an assistant. Previous to opening the stomach sterilized gauze was packed all around it and into the wound, effectually shutting off the abdominal cavity. The part of the stomach that was extra-abdominal was kept lifted up by the assistant, and was also protected by sterilized gauze.

The opening into the stomach, into which I could look and see the mass, was two inches in length. I introduced a pair of Bergmann calculus forceps and delivered the articles that were on top in the pile of hardware. I continued this operation with the forceps until I felt that its further use might "jab" the sharp articles into the stomach wall. I had provided myself with various shaped spoons, thinking that perhaps they might be of value to scoop out the articles within the stomach. Seeing the sharp nature of the objects, however, I concluded not to use the spoons, but to enlarge the stomach incision and introduce my hand. The wound was enlarged to four and one-half inches, so that my hand could pass freely into the cavity of the stomach. From the first incision (two inches) there was no hemorrhage, and from the last only a little bleeding from the cardiac end of the wound; this was arrested by putting on a hemostatic forceps. With my left hand I scooped out the remaining articles. I worked very carefully so as not to injure the stomach walls, and also not to cut my fingers on the sharp points of the nails, staples, etc., and on the broken pieces of glass. I had expected to find some of the articles imbedded in the mucosa or walls of the stomach. The objects were clean (kept so by the action of the gastric juices). The iron ones were blued and smooth; those of brass and copper (cartridges and chain) of their natural color and bright. There was a thick glairy mucus between them, the glass especially being surrounded by this mucus. During the operation of removing the objects there was continual secretion into the stomach taking place, so that it was necessary, every now and then, to mop this out by means of gauze sponges. The color of the secretion was greenish black.

To satisfy myself that everything had been removed I swept my fingers over the interior of the stomach, especially along the greater curvature, and introduced my index finger into the cardiac and pyloric openings. Everywhere the mucosa was free from pockets; nor could anything be felt in the stomach walls. Being satisfied that everything had been removed, the interior of the stomach was irrigated with sterilized water, a small quantity being poured in and mopped out with gauze sponges. This operation was repeated several times. Inspection of the mucosa did not reveal any ulcerations, simply abrasions here and there; the membrane seemed somewhat thickened, however.

The stomach wound was closed by three rows of sutures. The first was a strong No. 6 silk, threaded on a straight thick darning needle, and was passed through the mucosa in the form of a continuous suture. The second was of the same silk as the former, a continuous suture, and introduced through the peritoneum and muscular coat, so as to bring the peritoneal surfaces into apposition. The beginning of this line of sutures was one-fourth of an inch from the end of the wound, in the form of a Lembert stitch. The first stitch being tied, the rest of the suture was passed, entering a little more than one-eighth of an inch from the lip of the wound, coming out of the wound and re-entering the opposite lip of the wound. The third row was made with No. 2 braided silk threaded on a straight No. 8 sewing needle. This was a continuous Lembert suture, and completely buried the previous layer of sutures.

The stomach was carefully wiped off with gauze sponges, as was also the abdominal wound. The packing of gauze, which was hardly soiled so carefully had the operation been done, was removed from the abdominal wound, everything again "reviewed," and then the stomach was dropped into the abdominal cavity. There was a strong temptation to lessen the size of the stomach by imbricating a portion of the wall, but I concluded to allow nature to assert herself and correct the dilatation.

The abdominal wound was closed by interrupted through and through sutures. Iodoform collodion was applied over the abdominal sutures, and a cotton pad and a bandage applied.

The time of operation was one hour. The list of articles removed from the stomach shows: Twenty-five staples for barbed fence wire; 15 one and one-half inch screws; 6 two inch horseshoe nails; 16 two inch wire nails; 30 one and one-half inch wire nails; 16 thirty-two caliber cartridges; 5 thirty-eight caliber cartridges; 2 pocket-knife blades (broken); 2 inches of brass wash-stand chain, and 2 small staples; total 119 pieces. Eight cartridges passed after operation. There was also one ounce of comminuted glass (electric light globe); making the total number of objects 127, total weight, one pound.

PROGRESS OF THE CASE.

From the time of admission into the Rebekah Hospital, March 30, to the time of operation, April 7, the records show that the patient complained daily of acute griping pains. Sometimes these pains would recur every fifteen minutes. He was kept on liquid diet and bowels moved by salines and enemata.

Bedside record.—On the morning of the operation, April 7, the patient's temperature was 98, pulse 74.

April 7: 7 P.M., temperature 99, respiration 38, pulse 72; belching considerable gas; 9:45 P.M., temperature 99.5, respiration 34, pulse 114; one-thirtieth strychnia given hypodermically.

April 8: 12 A.M., temperature 100, respiration 34, pulse 90; 10:30 P.M., temperature 99.4, respiration 30, pulse 86. Vomited some dark slimy matter, about 3 ozs.

April 9. 12 A.M., temperature 99, respiration 30, pulse 96;

10:30 P.M., temperature 100, respiration 28, pulse 86; vomited dark green slimy liquid.

April 10: 1 A.M., temperature 98, respiration 28, pulse 86; 2:15 P.M., temperature 101, respiration 30, pulse 88. Coughing; inhalation of tinct. benzoin and chloroform. Calomel gr. 1 every hour for eight hours. Examination of lungs posteriorly reveals coarse râles in right lung; 4:15 P.M., temperature 102, respiration 30, pulse 88.

April 11: 1:15 P.M., temperature 101.6; respiration 28, pulse 90; 7:35 P.M., temperature 102, respiration 27, pulse 86. Examination of lungs by Prosessors Lemen and Crandall revealed pneumonia of right lung with solidification at base.

April 12: 12 A.M., temperature 101, respiration 26, pulse 82; 2:15 P.M., temperature 102, respiration 30, pulse 88; 8 P.M., temperature 102, respiration 30, pulse 90.

April 13: 8 A.M., temperature 100, respiration 32, pulse 88; 12:15 P.M., temperature 101, respiration 30, pulse 88; 9 P.M., temperature 101. respiration 30, pulse 88.

April 14: 8 A.M., temperature 101, respiration 28, pulse 90; 4:45 P.M., temperature 101.3; respiration 28, pulse 90.

April 15: 8 A.M., temperature 100.3, respiration 22, pulse 86; 2:30 P.M., temperature 101, respiration 22, pulse 86; 8 P.M., temperature 100, respiration 22, pulse 84. Wound was dressed today. The stitches, which were loose, and the collodion dressing were removod. The bridges of tissue between the stitches seemed to be united. The wound was macerated under the dressings and a large area of epidermis around the wound was exfoliated. A pad of gauze was placed over the wound and over this adhesive strips, taking a good hold on either side of the wound (passed halfway around the body).

April 16: 8 A.M., temperature 100, respiration 24, pulse 84; 4:30 P.M., temperature 100, respiration 24, pulse 86. Wound had discharged very much so that dressings were soaked. On removing the dressings and plaster I found that the parietal wound had become torn open and was gaping. The peritoneum, however, was intact, with the exception of the lower angle, at which there was an omental protrusion about two inches long and one and one-half inches at the base. The wound was carefully cleansed with sterilized water and firmly packed with iodoform gauze, the gauze being so placed as to surround the protruding omentum so as to isolate it from the rest of the wound. No bad effects seemed to follow the opening of the wound.

April 17: 1 A.M., temperature 101, respiration 24, pulse 86; 12:15 A.M., temperature 99.5, respiration 22, pulse 84. Wound dressed and packed as on previous day.

April 18: Condition as on previous day. Wound dressed.

April 19: 8 A.M., temperature 100.2, respiration 34, pulse 84; 4:15 P.M., temperature 100, respiration 22, pulse 84. Wound dressed.

April 20: 8:30 A.M., temperature 100.2, respiration 24, pulse 90; 4:30 P.M., temperature 99.3, respiration 22, pulse 84. An elastic ligature was thrown around the base of the omentum so as to strangulate the protruding portion, having waited until now so as to get firm adhesions to the peritoneum. The only inconvenience caused by this protrusion was nausea at times.

April 21: 8 A.M., temperature 98.4, respiration 22, pulse 84; 5:30 P.M., temperature 100, respiration 22, pulse 86. Omental stump contracted, circulation cut off; twisted ligature tighter; wound repacked.

April 22: 8:15 A.M., temperature 100, respiration 22, pulse 86; 5 P.M., temperature 99, respiration 20, pulse 82. Dressed and packed wound. Cut off the omental tumor, first tying a heavy silk ligature around it.

April 23: 10 A.M., temperature 100, respiration 22, pulse 80.

From this time on the temperature varied from normal to 99.5 degrees F., the pulse from 76 to 80, and respiration from 16 to 20 per minute.

With the general improvement the lung also became cleared up, so that by May 1 all symptoms of consolidation had passed off. The wound is closing up fast by granulations.[2]

REMARKS.

The object in giving the details of this remarkable case is to call attention to several peculiarities. 1. The pneumonia. 2. The non-union of the wound and blistering of the skin.

From the bedside record given above it will be noted that the patient promptly recovered from the shock of the operation; in fact, there was practically no shock at all. On the evening of the day of operation his pulse ran up to 114, temperature, 99.4 degrees, respiration 34, and the condition of the pulse, respiration and temperature during the first three days after the operation shows a perfectly aseptic, normal course. On April 10 it is noted that the patient coughed, and an examination of the lungs indicated congestion. The day following, April 11, examination by Profs. Lemen and Crandall revealed solidification of the lung on the right side. Referring to our bedside record we find the following: 1 A.M. temperature 98 degrees, respiration 28, pulse 86; 2:15 P.M. temperature 101 degrees, respiration 30, pulse 87; 4:15 P.M. temperature 102 degrees, respiration 34, pulse 88.

The patient had no chill, nor did he have much pain. The coughing caused him some pain, but there was no expectoration of pneumonic sputum. Here we have the evidences of a hypostatic pneumonia, although with atypical symptoms, especially when we note the respiration and pulse, a temperature of 102 degrees, and pulse not above 96. Usually, when inflammatory or congestive conditions of the lung supervene with a rise of temperature there is a concomitant rise of pulse, so that with a temperature of 102 degrees we would expect a pulse rate considerably above 100; that has been my experience. The interesting feature about this question is, what caused the pneumonia? It is possible to have hypostatic pneumonia following surgical operations, in cases that are debilitated. It may follow in any case of sickness of long duration where the nutritive powers are below par. Yet I have never had it occur in my surgical practice.

What part did the X-ray play in its production? This question I can not answer positively, only in a conjectural way. It will be noted that the patient was exposed several times, the exposures varying from thirty minutes to one hour. Including the use of the fluoroscope, he was exposed perhaps five hours in all. The conditions, such as chilling the patient, under which the exposures were made might have been a factor in causing the pneumonia. The room in which the exposures were made was of average temperature, 70 degrees F. The patient was exposed having on only a thin undershirt, with lower limbs enveloped in a blanket. The first exposure was made on April 2, five days before the operation and eight days before the first symptoms of the lung complication arose. The last exposure was made the evening before the operation, and four days before the complication arose. The above facts would not bear out the argument that exposure of the patient to changes of temperature caused the pneumonia, because we know that where exposure is a factor in producing pneumonia the onset is rapid, usually ushered in by a chill, increased temperature and high pulse-rate. I can not imagine a pneumonia, such as our patient had, with its atypical symptoms, to follow exposure; so that I believe we can exclude this argument. The only one left would be that the X-rays were the cause.

The extensive use of the X-rays develops the fact that under certain conditions they are not as harmless as may be supposed. Reports of cases of burns of the integument are received. Two have occurred in the Rebekah Hospital, not in my service, however. It is reported that depilation and periostitis occur. These

[2] The usual rules as to feeding after laparotomy were observed: No food or drink for first twenty-four hours; then liquids, liquid peptonoids, malted milk. After ten days, oatmeal and solid food. Pneumonia was treated expectantly, free stimulation, etc.

Objects removed from the stomach of Sig. Rinana by A. H. Meisenbach, M.D., at the Rebekah Hospital, St. Louis, April 7, 1897.

GASTROTOMY FOR THE REMOVAL OF FOREIGN BODIES. CASES REPORTED UP TO DATE.

No.	Date.	Literature.	Operator.	Patient, Sex, Age, Occupation.	Foreign body.	Time in Stomach.	Condition before Operation.	Operation.	Adhesions.	After Treatment.	Results.	Remarks.
1	1602	Kaiser, Czerny's Beitr. z. Operat. Chir. 1878, p. 98.	Mathis, Prague.	M., 36, Juggler.	Knife, 21 cm.	51 days.	No great inconvenience.	Adhesions produced by irritant plasters. Knife extracted through incision.	Pyloric end to abdom. walls.	. . . . .	Recovery after few weeks.	. . . . .
2	1635	Berlin. Klin. Woch., No. 7, 1883.	Daniel Schwabe, Koenigsberg.	A. Gruenhyde, M., 22. Farmhand.	Tableknife, 18 cm. long, 1.5 cm. wide.	41 days.	No great difficulties.	Incision beneath and parallel to short ribs. Stomach hooked up with curved needle. Knife removed through cut made upon blade, which could be felt through stomach walls. Stomach wound left to take care of itself. Abdom'l incis'n closed with 5 stitches.	None.	Abdomin'l stite'es removed on 2d and 3d days; wd. washed with wine; strict diet, 14 days.	Recovery after two weeks.	First few days bloody urine; first stool also bloody; lived many years and in perfect health.
3	1692	Neu. Mag. f. Aertz., v. Baldinger, xiii, p. 570. 1791, Richardson, Bost. Med. and Sur. Jour., Dec. 16, 1886.	Wesener, Halle.	Rudluff. "Hallischer Messerschlucker." M., 16. Farm. boy.	Knife.	Seven months.	No great inconvenience.	Seven mos. after swallowing ulceration 3 finger brdths. beneath pit of stomach. Marked redness; 6 days later spontaneous opening with fetid pus; 9 wks. later knife appeared in wd.; fastened by means of silk thread tied around boy's waist; 2 wks. later spontaneous delivery.	Exten. sive.	. . . . .	Complete recovery.	. . . . .
4	1720	Meyer, Ueber d. Gastrot. Insaug. Diss. Leip., 1862, p. 12. Mem. de l'Acad. Royale. 1743. iii, p. 167.	Huebner, Rastemberg.	Woman.	Knife, 16.5 cm.	11 days.	3 days no disturbance, then sharp pains; soon knife could be felt on left side.	On 11th day incision in left hypochondrium, where suppuration had occurred; at this point knife had penetrated stomach wall.	Pyloric end to abdom. wall.	. . . . .	Recovery in a short time.	. . . . .
5	1786	Kaiser, Czerny's Beitraege, 1878, p. 99.	Frisac, Toulouse.	Man. Porter.	Piece of knife, 4.5 cm. long.	. . . . .	. . . . .	Incision in epigastrium parallel with linea alba, through which knife could be felt; knife had pierced stomach wall; point grasped with forceps and knife removed; 2 stitches in stomach wound, 1 quill suture in abdom. wd.	Present.	. . . . .	Recovery.	Case overlooked until recently; probably authentic; Baron Larrey present at operation.
6	1819	Rust's Mag. f. d. Gesam. Heilk. xiii, 1820, p. 124.	Cayroche, in Mendes.	Woman. 24.	Silver fork, 3-pronged, 17x2 cm.	229 days.	Fork felt thro' epigas. In 5 mos. vomiting, severe pain, emaciation, swelling in left side size of hen's egg.	Incision 5 cm. long made over swelling, from above downward, rectus abdominis drawn to one side, stomach opened, fork withdrawn, tines first.	Extensive.	Bleedi'g practiced after opera.; wd. fever; abdomen tend'r; gastric fistula, closed in 4 days; solid food 6th day; left bed 14th day.	Complete recovery in 51 days.	. . . . .
7	1822	Adelmann, Prag. Vierteljahresschr., 1876, 131, p. 78. Prarlep's Not. 1822, No. 36, p. 224.	Reynard, in Grenoble.	Lajarisse. Young man. Juggler.	Fork.	31 days.	Fork felt through abdominal walls.	Gastrotomy, right side of abdomen.	. . . . .	. . . . .	Complete recovery.	Patient reported alive in 1875.
8	1823	Kaiser. Czerny's Beitr. 1878, p. 100. Sedillot, Contrib. à la Chir., 1868, ii, p. 456.	Berthernand.	Cavalryman.	Silver spoon.	Several weeks.	Pain in stomach after 1 week, followed by pain in epigastrium.	With exploring needle hard resonant body felt. Incision; removal of spoon with forceps.	General.	Simple dressings.	Rapid and permanent recovery.	. . . . .
9	1830	Richardson, Bost. Med. and Sur. Jour., Dec. 16, 1886.	Garcia.	. . . . .	Stick, 10 inches long.	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	Recovery.	This case is doubtful.
10	1836	Adelmann, Prager Vierteljahresschrift, 1876, Vol. 131, p. 79.	Fideli in Rivaam Gardasee, 1836.	Darmenica Borsetti. Chia cari ini. Peasant. Widow. 50.	Brass fork-handle and 4 p'g'd fork without handle, 10 cm. long.	About 2½ years.	Terrible pains, violent cramps, insomnia, vomiting after each morsel of food.	Fifteen months after swallowing abscess appeared in right hypochondrium; 2 mos. later large quan. of pus discharged thro' mouth; 1 mo. later open'g of abscess outward; after repeated clos'gs and open'gs of wd. sharp end of fork appeared, remaining in same position 11 mos; open'g then enlarged and fork removed.	Very extensive.	. . . . .	Wound healed in fifteen days.	Convulsions fol. oper. Slight hemor.; food particles discharg'd thro' wd. for 20 hrs. Hysterical subject who became insane after death of son.
11	1846	Adelmann, Prager Vierteljahresschrift f. d. Praktische Heilkunde, 1876, Vol. 131, p. 80.	Tilanus, in Leyden.	Insane woman. 32.	Silver fork, 21 cm. long, also piece of earthenware pyramidal in shape, 2x1 cm.	3 days.	Extremely emaciated; Swallowing followed bydysphagia; presence of bodies determined by palpation and metal stomach sounds.	Under ether narcosis, incision 8 cm. long, parallel to linea alba, from point 3 cm. below ensiform cartilage; stomach not seen but felt, drawn forward and fixed with 2 forceps: incision into stomach 2½ cm. long accompanied by free hemorrhage; after repeated efforts fork and earthenware located and extraced; stomach closed with 5 sutures, ends of which were allowed to project from lower angle of abdominal wound; latter closed with simple sutures; secured with adhesive strips.	None.	On first and second days occasional vomiting of greenish-yellow fluid; abdomen somewhat painful, tender and tympanitic; pulse, 2d day, small, weak, 160.	Death morning of 3d day.	Autopsy; plastic exudate in wd. region; stom., liver and abdom. walls glued together; stomach wd. entirely closed; dilatation great; upper third of esophagus wounded and perfor. in region of larynx. Suppurating sinus near thyroid gland.
12	1855	American Jour. Med. Sciences, July, 1856, p. 272.	J. Bell, Walpello, Iowa, U. S. A.	Man. 27. In a drunken fit.	Bar of lead, 10 x ¾ x ½ in., weight 1 pound.	9 days.	No inconvenience at first; on eighth day pain, vomiting and prostration.	Jan. 3, incis. 4 in. long, from umbil. to false ribs, 2 in. to left of median line; incis. into stom. large enough to withdraw bar of lead; allowed to close by contraction of muscular walls of stom.; abdom. wd. closed with suts.	None.	Symptoms of gastritis; injecti'n of morph.; 2 venesect'ns; enemata; abdominal wd. healed in 5 days.	Recovery in fourteen days.	At work on Feb. 19, 1856. Operation done in twenty minutes.
13	1856	Kaiser. Czerny's Beitr. z. Operat. Heilk. 1878.	Glueck, America.	. . . . .	Tracheal catheter.	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	Death.	. . . . .

14	1856	Schmidt's Jahrbücher, In		Military suf-	Fork.	. . . . .	. . . . .	Gastrotomy.	. . . . .	. . . . .	Recovery.	. . . . .

14	1856	Schmidt's Jahrbücher, 1876, p. 159.	In France.	Military surgeon.	Fork.	. . . . .	Gastrotomy.	. . . . .	. . . . .	Recovery.	. . . . .
15	1857	Adelmann, Prag. Vierteljahrsss. 1876, 131, p. 78	Bouchet, in Lyons.	Woman.	Silver fork.	. . . . .	Gastrotomy.	. . . . .	. . . . .	Recovery.	. . . . .
16	1858	Richardson, Bost. Med. and Sur. Jour., Dec. 16, 1886.	Holbeck, Wadkinsk.	Peasant. Simeon Wodlon.	Iron fork, wood hndl. 21 cm. long.	6¼ months.	Loss of appetite, pain, nausea and vomiting.	Between 7th and 8th ribs small fluctuating cavity with fistula secreting fetid pus; metallic body felt, incision made and fork extracted.	Extensive.	Discharge of cartilagino's portions 7th and 8th ribs.	Death three months later.	Death due to caries of sternum and several right ribs. Autopsy shows perfect adhes. of stom. incision with abdominal walls.
17	1876	Schmidt's Jahrbücher, 1876, p. 172.	Leon Labbé, Paris.	Lansseur. 18.	German silver fork, 5 prongs.	2 years and 10 days.	Symp. of asphyxia, ceasing after fork passed larynx; later attacks severe gastralg. with syncope, fail. health; end 2d year frk. prongs felt in region of stom.	Caustics applied first to produce adhesion of stomach to abdominal wall without success; incision 4 cm. long, internal to and parallel with false ribs; with forceps part of stomach grasped and drawn through wound; sutured in position with 8 stitches, incised and fork removed with forceps.	None.	Solid food after 5th day; no fistula remaining after 15th day.	Complete recovery.	. . . . .
18	1879	Hacker, Magenoperat. 1886. N. Y. Med. Rec., xx, June 6, 1879.	J. C. McKee. America.	M. 28. Laborer.	Copper wire 3 inches long.	Two months.	Wire inserted in nostril; disappear. into pharynx and stom.	Two months after swallowing acute pain to the right anu 3 inches below umbilicus. Tumor formed, cut down upon and wire removed from pus cavity.	. . . . .	. . . . .	Recovery.	It is not definitely known that wire was in stomach.
19	1880	Berliner Klin. Wochen. 1880. Richardson, Bost. Med. and Sur. Jour., Dec. 16, 1886.	Billé.		Sponge covering pencil attached to silver wire, 50 cm.	. . . . .	Esophagotomy done first at level of hyoid bone; body could not be grasped.	Gastrotomy done later; incis. 2 finger breadths below margin of ribs, 3.5 cm. long thro' peritoneum; stom. stitched to abdom. wound; incision 2.5 cm.; sponge at pylorus; seized, removed with silver wire,; was in lower end of esophagus; whole was 35.5 cm. long.	None.	. . . . .	Death five days after operation.	. . . . .
20	1880	Med. Press and Circular, N. S., xxxii, 1881, p. 321.	L. A. Fleury. South America.	M. Cook.	Plated dinner fork.	2 months and 6 days.	No inconvenience except slight naus. and vomit.; two months later jumped from low fence, felt sharp pain in upper part of abdom.; fork prongs felt through walls.	Gastrotomy Sept. 14. Incision 3 in. long, gastric region, external border rectus muscle Incision around tines of fork. Fork extracted, handle in pylorus, prongs in anterior walls of stomach.	None.	Icewater diet.	Recovery.	Fork swallowed accidentally while patient tried to imitate slight-of-hand performance.
21	1880	Beliner Klin. Wochenschrift, 1883, p. 106.	Felizet.	M. 19. Waiter.	Spoon.	. . . . .	. . . . .	Stomach inflated with ether so as to be easily seen and grasped.	None.	. . . . .	Recovery. 3 weeks.	Small fistula remaining.
22	1882	Richardson, Bost. Med. and Sur. Jour., Dec. 16, Dean, '86; Lancet, '82, 1, p. 1014.	Beattie and Hong Kong	Ito. M.	Toothbrush.	5 days.	. . . . .	Gastrotomy done on 5th day; transverse incision; brush removed; stomach and abdominal wound sewed up.	None.	. . . . .	Recovery.	. . . . .
23	1883	Correspondenzblatt für Schweizer Aertzte, 1883, Nos. 23 and 24.	Kocher. Berne.	M. 37.	Coin Probang.	1 day.	Hardly any disturbance.	Incis. 2 cm. below margin of ribs; stom. opening 3 cm. long midway between greater and lesser curvat.; stom. clos. with 10 Lembert stitches.	None.	. . . . .	Recovery.	. . . . .
24	1883	Centralb. f. Chir., 1884, No. 20; Wiener Med. Woch., 1883, Nos. 51–52.	Gussenbauer. Prague.	M. 29. "Sword-swallower."	Part of swrd. 27x2 cm. Jagged end, round p't.	2 days.	Emetics and suspension by feet; fever, vomiting and hiccough; not palpable.	After opening of abdom. sword found wholly in stom., lying obliquely from above down to the left; removed with little trouble.	None.	. . . . .	Death in two days; septic peritonitis.	Point of blade had pierced stom. wall; other end had lacerated esophagus.
25	1883	Langenbeck's Archives, Vol. 29, p. 609.	Schönborn Königsberg.	F. Young girl.	Hair ball.	Formed gradually.	Tumor in left side of abdom.; supposed to be spleen, omentum or floating kidney.	Laparotomy; long incision in anterior wall of stomach; ball free in stom.; easily removed; stomach wound closed with 65 Madelung stitches.	None.	. . . . .	Recovery in 3 weeks.	Both wounds healed by first intention.
26	1883	Centralb. f. Chir., 1884, Vol. 42, p. 708; London Lancet, 1886, No. 3.	Knowsley Thornton.	F. Young girl. 17.	Hair ball, 9 inches long.	Formed grad. fr. comb'gs	Diagnosed as abdominal tumor.	Abdominal incision in linea alba; stomach incision transverse, to avoid vessels; wound closed with 15 sutures.	None	Sponge missed; abdom. re-open'd day after opera.; sponge found.	Recovery.	. . . . .
27	1883	Centralblatt f. Chirurgie, 1883, p. 342; Gazette des Hopitaux, 1883, No. 39.	Gerard Bourgueil.	M. 30.	Stick of elm wood, 21.5 cm. long.	6 weeks.	Pain, nausea and vomiting; purgatives used without success.	Six weeks after swallowing abscess formed 4 cm. below margin of ribs; opened; foreign body in bottom; 10 cm. cut off and removed; 40 grams of castor oil, and rest of stick came with stool on following morning.	Extensive.	. . . . .	Recovery in 14 days.	. . . . .
28	1885	Billroth. Langenbeck's Archives, Vol. 29, p. 609.	Billroth. Vienna.	Girl. 19.	Plate of 6 teeth.	. . . . .	Palpation painless. Nothing detected.	Incis. 11 cm. long, beginning 7 cm. below ensiform cartilage in median line, extending obliquely downward to left; stomach drawn forward by 2 thread slings, teeth pushed into this portion and removed; closure with superficial stitches and several Lembert stitches; abdominal wall sutured in three stages.	None.	Ligature discharged through a sinus in the fourth week.	Recovery after the 5th week.	. . . . .
29	1885	Langenbeck's Archives, Vol. 33, p. 574.	Credé. Dresden.	Friedrich Möcke. M. 24. Hair dresser.	Plate with 8 teeth and 2 clamps.	1 week.	Pain in pylorus, then nausea, vomiting and sleeplessness and great excitement.	Oblique incision, 12 cm. long, parallel to ribs; stom. drawn through opening, plate felt thro' pylorus; incision through stomach wall 5 cm. long, beginning 2 in. from pylorus; stomach wound closed with 3 rows of stitches; dropped back into abdomen; abdominal wound sutured and dressed with iodoform.	None.	Very little reaction; no vomiting.	Recovery in 21 days.	. . . . .
30	1886	New York Medical Record, 1886.	Bernays. St. Louis.	M. 28. Tailor.	Knife 24 cm. long.	30 minutes.	No great inconvenience.	. . . . .	None.	. . . . .	Recovery in short time.	. . . . .
31	1886	Bull, de l'Acad. de Méd., Aug. 24, 1886.	Podalilion.	M. 24.	Plated iron fork 21 cm. long, wt. 59 grams.	15 days.	Diagnosis with electromagnet; positive result.	. . . . .	None.	. . . . .	Recovery.	. . . . .

32	1886	Lancet, '91, i, p. 249; Brit. Med. Jour., Jan., 1893.	Lawson.	M. 37.	Iron wire 7½ in. l. Clay pipestem 9½ in. long.	. . .	. . .	. . .	None.	. . .	Recovery.	Insane; attempted suicide.
33	1886	Boston Medical and Surgical Journal, 1886, ii, p. 569.	Richardson.	Jno. McC. M. 37. Teamster.	Plate with teeth.	11 mos.	Constant pain; great emaciation; inability to swallow food; body detected with iron probang, about 2 inches above cardiac opening into stomach.	Incis. 6 in. long in left hypochondrium, 1½ in. below and paral. to margin of ribs, beginning at anterior border of rectus, extending down ward and outward; stom. raised with T-forceps, incis. to admit hand and forearm; foreign body located in esophagus and removed with index finger and forceps; stom. closed by 2 layers of sutures, mucous memb. with continuous silk, peritoneal with 36 Lembert; abdom. closed with deep and superficial silk suts.	None.	High'st temp. 101.8 cough, expect. of pus; 3d dy. about 8 oz.; 4th dy. 2 to 4 oz.; liquids, ice-cream to end 2d wk., later sol. food plenty; wt. In 4½ mos. 165 lb., stitches cut 7th day.	Recovery. Went back to work in 2 months and 20 days.	First case recorded in which hand was introduced into stomach for the purpose of removing foreign body.
34	1887	Langenbeck's Archives, Vol. 37, p. 233.	Stelzner.	M. 25.	6 pieces wood 8–10 cm. l. ⅜ to 1½ cm. thk.	28 days.	Serous mem. of stom. pale, mucous membrane engorged.	Gastrotomy and enterotomy with removal of 4 pieces of wood; 9 days after patient's dischar. 2d enterotomy with remov. of 3 pieces of wood.	None.	. . .	Recovery.	. . .
35	1887	N. Y. Med. Jour. 1887, Vol. ii, p. 181.	Bull.	M. 16. Boy.	Peach stone.	9 days.	Stone lodg. in esopha. near cardiac open'g.	Removed through mouth with sponge passed by way of stomach.	None.	. . .	Recovery.	. . .
36	1888	Nord. Med. Arkiv. Schmidt's Jahrb., ⅝18.	Berg.	. . .	Hair ball. Wt. 900 gr.	. . .	. . .	. . .	None.	. . .	Recovery.	. . .
37	1888	Jour. Amer. Med. Asso. Centralblatt f. Chirurgie, No. 48.	Witte.	F. 31. Acute mania.	Four prong. fork 7½ in. long.	3 mos.	. . .	. . .	Stom. to abdom'l wall; anterior wall of stomach perforat.	. . .	Recovery.	. . .
38	1889	Bull. de Chir. Virchow's Jahresbericht, ii, p. 524.	Terrier.	M. 19. Butcher.	Fork, 22 cm. long.	24 hours.	. . .	. . .	None.	. . .	Recovery.	. . .
39	1889	Sklarek. Inaugural Dissertation. Bonn, 1889.	Tredelenburg.	M. 25. Officer.	Plate with 1 tooth.	Several hours.	. . .	. . .	None.	. . .	Recovery.	Swallowed during sleep.
40	1889	Langenbeck's Archives. Vol. 38, p. 169.	Hashimoto.	M. 36. Hairdresser.	Toothbrush, 16.5 cm. l'ng.	7 days.	Anterior wall of stom. perfora. (Peritonitis)	After body was extracted, excision of fistulous opening was done and wound sutured.	Extensive.	. . .	Death, 3d dy. Peritonitis.	Anterior end of brush handle thickness of leadpencil and split.
41	1890	Gaz des Hop., No. 51. Virchow's Jahresbericht, Vol. ii, p. 514.	Perier.	M. 32. Demented.	New silver coffee spoon.	24 days.	Examination with electric sound gives positive diagnosis.	. . .	None.	. . .	Recovery.	. . .
42	1890	Boston Med. and Surg. Jour., No. 123, p. 177.	Richardson.	F. 80.	Open safety-pin.	4 days.	. . .	Found sticking in posterior wall of stomach.	None.	. . .	Recovery.	Leadpencil hold'r discharged later per rec.
43	1891	Semaine Med., 1891, i, p. 1. Schmidt's Jahrbuch, No. 232, p. 174.	Heidenreich. (Nancy.)	M. 29. Sword-swallower.	Silver spoon 20 cm. long, wt. 27 g.	14 days.	. . .	. . .	None.	. . .	Recovery.	. . .
44	1892	Johns Hopkins Hosp. Bul. Virchow's Jahresbericht, Vol. ii, p. 447.	Finney.	M. 49.	Peach stone.	5 days.	. . .	Large opening of stomach; removal of stone with sponge drawn down esophagus by sound passed up through stomach.	None	. . .	Recovery.	. . .
45	1892	Medical Fortnightly, St. Louis, Mo., U. S. A., May 15, 1892.	Heine Marks. St. Louis, Mo., U. S. A.	John W. K. M. 20. Glass and tack eater.	Pieces of glass, tacks, screws, nails, etc., 16 removed.	At odd intervals during 8 years.	One attack of gastro-enteritis in 1890; lasted 1 week; 2d attack 4 days before enter'g hospl.; severe pains, vomiting some tacks, screws and nails. Abdom. tender but not tympanitic; appetite *nil;* gradual decline to state of exhaust'n.	Median incision; stomach raised into wound and hard masses felt; incision 3 in. long in superior curvature; about 13 ounces of glass, tacks, screws, nails, etc., removed; stomach flushed out and apparently all foreign bodies removed; closed with interrupted Lembert sutures; peritoneal cavity sponged out and abdominal wall sutured.	None.	Hypodermic stimulation. Heat externally.	Death a few hours after operation.	No hemorrhage from stom.; no tympanites or peritonitis; post-mortem 10 hrs. after death revealed numerous ulcerati'ns and scars in digest. tract, and foreign bodies, about 3 oz. lodged in esopha., stom., large and small intestines and appendix.
46	1893	Lancet, i, p. 20. Centralb. f. Chir., '93. No. 36.	Cant.	F. 68. Suicide attempted.	Razor.	6 days.	Severe hemorrh.; abscess of abdom. wall.	. . .	None.	. . .	Death fifth day.	Lavage with perm'gnate of potash solu'n.
47	1894	The Medical Fortnightly, St. Louis, Aug. 15, 1894.	Outten. St. Louis, Mo., U. S. A.	J. P. M. 52. Section hand.	Double gastrolith, *a*, 12.5 cm. long, wt 396.8 gram. *b*, 6.9 cm. long, wt. 220.8 gram.	. . .	Nausea and vomiting at repeated intervals; dragging pains in region of stomach.	Incision, 6 inches, in linea semilunaris, from top of thi transversely across to linea alba; stomach raised into wound, incised, and larger gastrolith removed; Lembert sutures; second incision also transversely to avoid vessels, second mass removed; Lembert sutures; abdomen sutured.	None.	Pneumonia complication; 1 mo. after operation convalescent and walking about wards; consolidation and cough persisted and phthisis developed; pulmonary trouble attributed by Dr. Outten to ether.	Recovery from operation; death from phthisis three months later.	Double incision into stomach was surgical mistake, but was better than to leave needle holes at first suture line.
48	1894	Lancet, i, p. 734.	Wallace.	F. 28.	Plate with 5 teeth.	Several days.	Lodged in lower portion of esophagus.	Introduction of entire hand into stom., remov. of teeth from esopha. with finger and forceps.	None.	. . .	Recovery.	Swallowed accidentally during sleep.
49	1894	Lancet, ii, p. 432.	Gemmel.	M. 43.	192 nails, buttons, hair-ball; total wt. 11 lb. 9½ oz.	. . .	Anterior stomach wall injured but not perforated.	. . .	None.	. . .	Death 4 hrs. after operation from collapse.	Piece of wood and one nail found in abdom. at postmortem; probably escaped when stomach was opened.

50	1894	Lancet, II, p. 1028.	Mayo Robson.	F. 10.	43 iron nails, 93 brass and zinc wires, 12 larg nails, 3 buttons, 1 safety pin, 1 sew. needle.	.....	.....	.....	None.	.....	Recovery.	.....
51	1894	Deutsche Med. Wochenschrift, No. 39.	Czerny.	M. 32. Laborer.	3 shut pocket knives.	48 hours.	Swallowed foreign bodies as a means for a livelihood.	.....	None.	.....	Recovery.	After operation swallowed two pocket knives which passed off per rectum.
52	1895	Lancet, April 6, p. 904.	Swain.	F. 20.	Hairball, 5 lb. 3 oz.	.....	.....	.....	.....	.....	Recovery.	.....
53	1895	Centralblatt f. Chirurgie, 1896, No. 3.	W. of Schutten	F. 30. Weaver of shoe-uppers of cow's hair.	Hairball, 7.6 cm. diam., wt. 120 gm.	.....	.....	.....	Marked; extensive to periton.	.....	Recovery.	.....
54	1896	Jour. Amer. Medical Asso., Feb. 1, 1896.	Wm. L. Allen, Davenport, Iowa.	Maggie Heinz. F. 16.	Hairball, length 9½ inches, circumference 8½ in.	.....	More or less pain after eating; vomiting frequent; emaciation; alternating diarrhea and constipation.	Incl. in median line, from ensiform cartl. down below umbilicus; stom. incl. long, parallel to greater curvature; hairball removed with difficulty; stom. wound sutured in two layers; mucous membrane continuous silk; serous interrupted Lembert.	None.	Codein, ½ gr. hypodermically; milk, liquid peptonoids per rectum; peptonized milk by mouth 6th day; stitches removed 7th day; union by first intention.	Recovery; discharged cured on 26th day.	Patient was in the habit of biting off ends of hair since 3 years of age; felt tumor during last five or six years, but it did not increase in size apparently.
55	1896	Annals of Surg., April, 1896, p. 415.	Morton, Bristol.	M. 27.	Plate with 2 upr incisors	1¾ years.	.....	.....	None.	.....	Death, 8th day.	Swallowed accidentally; death from local suppurative periton.
56	1896	Centralb. f. Chir., No. 31. Bericht über den Congress, No. 24, 1896.	Stelzner.	F. 18.	Hairball size of goose-egg wt. 180 gms.	.....	.....	.....	None.	.....	Recovery.	Habitually bit off the ends of own hair and that of other girls.
57	1897	Deutsche Medicinische Wochenschrift, Jan. 21, 1897.	Fricker, Odessa.	Mrs. A. F. 32.	1 key, 2 teaspoons, 1 fork, 2 piec. wire, 2 hairpins, 12 piec. glass, 1 window latch, 1 steel pen point, 2 sew. needles, 1 piece of graphite, 1 sm. shoebutton, 1 grapeseed, 1 crocheting needle.	Articles swallowed at various intervals during 3 mos. prior to operation.	At first slight inconvenience, loss of appetite, slight pain, gradual emaciation. All remedies without curative effect. Latterly all symptoms much aggravated; marked swelling in left side from margin of ribs to rim of ilium; fluctuating and very tender; vomiting and constipation.	Incision over swelling, evacuation of pus and withdrawal of crocheting needle; other articles detected in stomach; abdominal incision enlarged, stomach drawn out and incision made not connecting with abscess; incision 4 cm. long, near lesser curvature; all bodies removed without difficulty, except fork; stomach sutured, 2 rows; mucous, catgut; serous, interrupted Lembert silk; abdominal wound packed with iodoform gauze until fifth day, then closed with secondary suture.	Extensive.	Nourishment by enema during first five days; later, carefully regulated diet per os; temperature never above normal.	Recovery in 4 weeks.	Articles swallowed during attack of temporary insanity from loss of child, and with a view to suicide.
58	1897	Unpublished.	Von Quast, Kansas City, Mo.	M. 26. Showman.	Nine drams br'kenglass. 2 pock't knives, 5 knife blades, 1 barb wire staple, 3 screws, 1 horse-shoe nail, 16 tacks of all sizes, 4 finishing nails, 1 12-penny nail, 85 wire nails of sizes 4 to 12.	Not stated.	Emaciated, suffering from want of food and retching.	Incision ensiform to umbilicus; stomach incised so as to introduce forceps and fingers; stomach wound closed by interrupted Lembert sutures.	None of stomach; some of the foreign bodies to the mucosa.	Strych. hypodermic, or by mouth cautiously; rectal enema of warm water and nutrient enemata after 6 hrs.	Death in 48 hrs. from enteritis and exhaustion.	Patient was in wretched condition, but demanded relief. Possibly long exposure to X-rays to diagnose the contents of the stomach and relieve our minds of "faktrism" had something to do in the production of enteritis or peritonitis. There had been considerable hematemesis and blood passing from bowels.

NOTE.—The last case came to hand too late for classification at the time paper was read.

I wish to acknowledge the very valuable assistance rendered by my colleague Dr. W. H. Fuchs, in the tabulating of the cases of gastrotomy for foreign bodies herein given.

effects are not immediate, due to the heat of the electric current, but are remote in their manifestation, occurring sometimes five to ten days after the exposure. This being the case, there must be some effect of the X-rays on the tissues. Sorel, a French surgeon, recently made the statement, in a paper before the Havre Lyceum, that pneumonia can be produced by the X-ray. Having seen this statement in a cablegram from Paris, I wrote W. W. Keen about the case, because his extensive experience in X-ray work makes his opinion authoritative. According to Keen, Sorel is a French provincial surgeon whose statements are trustworthy. Keen also concurred in the opinion that it is possible to produce pneumonia by the X-ray.

Another argument in favor of the assumption that the X-ray caused the pneumonia is the fact that the pneumonia occurred on the right side, and the X-rays were directed principally over this side, because the mass was somewhat to the right of the spinal column when the patient was in the reclining posture.

The non-union of the wound is also an interesting question. In surgical wounds non-union may be due to the following causes: 1, faulty coaptation; 2, strains on the wound, 3, sepsis, 4, certain states of the system, such as extreme jaundice, etc.

The first, third and fourth conditions can be excluded entirely. It might be argued that patient's straining while coughing might have produced it. This might be true, but I have had patients in whom bronchial irritation before the operation (laparotomy) caused coughing spells afterward and, still, union took place. In these cases the precaution was always taken to support the wound by the application of adhesive strips around the body. It has been noted that when the stitches were removed the parts were macerated under the loose epidermis. This does not occur in normal wounds. The history is the strongest argument in support of the theory of the effect of the X-rays. In the cases reported the effects were always remote, as in this one.

Although I can not prove the statement at present. I believe that the complications in this case were due to the X-rays, an X-ray pneumonia and non-union of the wound. The *modus operandi* of the X-rays in these complications is, I believe, that they cause a vaso-motor paralysis, producing a dilatation of the vessels, from which cause local stasis results.

To my knowledge this case is the first on record in which the X-rays have been used to demonstrate foreign bodies in the stomach. Fricker, of Odessa (see case in table), was deterred from using them in his case on account of the extreme weakness of his patient. Fricker's and my case are the only ones reported of gastrotomy for the removal of foreign bodies, since the discovery of the X-rays. This case is also the first reported, in this country, of pneumonia following the application of the X-rays.

POINTS OF INTEREST.

The points of interest in this remarkable case are: 1. The period of time during which the patient has been swallowing objects. 2. The number of bodies found in the stomach. 3. The character of the objects found. 4. The absence of serious subjective symptoms in the patient, and the absence of serious pathologic conditions in the stomach. 5. The complications after the operation, due to the X-rays: *a*, pneumonia; *b*, non-union of the wound. 6. The first case of pneumonia due to the X-rays reported in this country. 7. The first case, on record, of foreign bodies in the stomach on which the X-rays were used to corroborate a diagnosis.

SUMMARY.

Summarizing the data contained in the foregoing table, we have the following:

Total number of cases reported to date, 58. Of this number there were forty-seven recoveries or 81.03 per cent.; ten deaths or 17.24 per cent., and one doubtful, or 1.73 per cent.

Of those cases in which no adhesions of the stomach to the abdominal walls or surrounding viscera were present, thirty-eight in all, there were thirty recoveries, or 78.95 per cent.; seven deaths or 18.42 per cent.; one doubtful or 2.63 per cent.

Of those cases in which adhesions were present, thirteen in all, there were eleven recoveries, or 84.62 per cent.; two deaths, or 15.38 per cent. Of those cases in which the existence of adhesions was doubtful, seven in all, there were six recoveries or 85.72 per cent.; one death or 14.28 per cent. It will thus be seen that the existence or absence of adhesions had, apparently at least, no influence on the mortality rate.

Assuming that the period of antiseptic surgery began with the year 1880, and dividing the reported cases into two groups, i.e., those reported before 1880, and those reported since that date, we have the following exhibit of mortality percentages. 1. Before the introduction of antiseptics: Total number of cases eighteen; recoveries fifteen or 83.33 per cent.; deaths three or 16.66 per cent. 2. After the introduction of antiseptics: Total number of cases forty; recoveries thirty-two or 80 per cent.; deaths seven or 7.50 per cent.; doubtful result one or 2.50 per cent.

A noteworthy fact in connection with the cases enumerated in the table is the short period intervening between the entrance into the stomach of the foreign body or the diagnosis of its presence there, and the performance of the operation, during the period since the introduction of antisepsis. This is probably attributable to two factors: 1. The improved methods and facilities for making diagnoses; and 2, the improvement in surgical technique and the extension of surgical interference since the introduction of antiseptics. Taking into consideration all the cases contained in the table, however, we find that the time intervening between the introduction of the foreign body into the stomach and its removal, is definitely known in only so few cases, that its consideration as a factor of possible influence on the mortality rate would be entirely unsatisfactory. It has, therefore, not been considered separately.

The following is a summary of the foreign bodies removed from the stomach by operation:

Forks in thirteen cases: hairballs in seven; knives in six; plates with teeth in six; spoons in five; pieces of wood in four; pieces of metal wire in four; nails in four; buttons in three; needles in three; tooth brushes in two; safety-pin in two; peach-stones in two; and screws, bar of lead, piece of earthern ware, tracheal catheter, metal probang, part of sword-blade, clay-pipe stem, razor, pocket-knives, hair-pins, pieces of glass, keys, window latch, piece of graphite, and tacks in one case each.

BIBLIOGRAPHY.

Greig Smith: Abdominal Surgery, 5th Edition, Vol. i, p. 493.
Poulet: Foreign Bodies, Vol. i, p. 186.
London Lancet.
Langenbeck's Archiv für klinische Chirurgie, Vol. xxxiii, No. 3.

Journal of the American Medical Association, Vol. xxvi, No. 5, Feb. 1, 1896.
Medical News, Philadelphia, Jan. 1, 1887.
Boston Medical and Surgical Journal Dec. 16, 1886.
Deutsche medicinishe Wochenschrift, Jan. 21, 1897.
Gould and Pyles: Anomalies and Curiosities in Medicine.
Medical Fortnightly, St. Louis, Mo., Aug. 15, 1894.

REMOVAL OF THE STOMACH FOR SARCOMA.

BY J. M. BALDY, M.D.
PHILADELPHIA, PA.

The JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Feb. 12, 1898, contains an article by Hugo Summa, M.D., and A. C. Bernays, M.D., entitled "The History and Diagnosis of a Case of Carcinoma of the Stomach and the first Operation of Excision of the Stomach in America."

In view of this report it may be of interest to recall a case of sarcoma of the stomach for which excision of that organ was performed by me more than four years ago, antedating some years the now famous case of Schatter of Zurich.

The case is well known in Philadelphia among my medical friends and has on several occasions been referred to in discussion on abdominal topics. The patient was examined by Dr. S. Solis-Cohen and I think Drs. T. S. K. Morton and Steinbach of the Polyclinic staff. Dr. John B. Roberts and other members of the staff were present at the operation. I was assisted by Dr. Frank Talley and one of the resident physicians of the hospital.

The case was reported and the specimen shown to the Pathological Society of Philadelphia by Dr. Alfred Stengel and myself. After careful investigation Dr. Stengel pronounced the case one of sarcoma of the stomach, an exceedingly rare condition. He requested the privilege of reporting the details of the case after he had thoroughly looked up the literature of the subject. I handed him the surgical notes to incorporate in his paper, which he informs me is ready for publication and will be shortly forthcoming. I might mention incidentally that he has been able after four years search to find in the literature but nine cases of a similar character (sarcoma of the stomach).

I append the surgical notes of the case which I handed Dr. Stengel four years ago to incorporate in his article and which he has kindly returned to me.

The patient entered the Polyclinic hospital Sept. 29, 1893 complaining of a tumor in his stomach together with great and progressing weakness and loss of flesh.

An examination disclosed an irregular rounded, nodular and solid tumor filling the whole abdomen from the pubes to the ensiform cartilage. The umbilicus protruded and contained a neoplasm which was unattached to the underlying tumor, about the size of a walnut. The pelvis was free and the tumor rested on the pubic bones; the fingers could easily be passed between the tumor and the pubes. As far as could be determined from the history and examination the kidneys were excluded as a possibility of the origin. The urine was normal. The spleen was likewise excluded, as was also the liver. A diagnosis of malignant tumor was easily arrived at from the nodular, irregular feel of the mass, its quick growth, the rapid loss of flesh and weakness and cachexia of the patient and the umbilical growth. By exclusion it was supposed to be a growth of either the mesenteric glands or of the omentum. If of the mesenteric glands operation was hopeless; if of the omentum some hope existed, especially as the tumor was freely movable. The chances were given to the omentum on account of this very movability and because the history showed that it had begun to grow from above downward. It was even at that time easy to determine that its attachment was above. The case was seen in consultation by the medical and surgical staff of the hospital and all agreed that the only chance of life lay in an exploratory operation and further that such exploration was justifiable. The friends of the family were communicated with and the facts placed before them. They were told that no promise could be given that the man would even come off the operating table alive, but that in an operation lay his only chance. They decided for the operation.

The stomach as a possible source of origin of the tumor was never considered for the following reasons. His bowels had to the last remained in good condition. He had never at any time complained of gastric disturbance of any kind; as he expressed it "my stomach has never given me a day's trouble, it is the strongest thing about me." In proof of the truth of his statement it is to be noted that he spent about a week in the hospital prior to his operation, ate voraciously and digested all he ate. At the time of the operation the stomach cavity was found practically empty. He never vomited.

An incision was made from the ensiform cartilage to near the pubes and the abdominal walls drawn apart. They grasped the tumor tightly as they slipped over its sides and contracted again under the tumor as it was delivered. In doing so many vessels in the omentum, which was spread out over the tumor and adherent to it, began to bleed. From this moment to have ended the operation would have been difficult, as the bleeding could only with difficulty have been controlled nor could the tumor have again been returned to the abdominal cavity and the abdominal wound closed; the operation had to be finished at all hazards. The tumor was lifted up from below and found adherent to all the underlying intestines; these adhesions were readily separated; freeing the tumor in all directions but leaving the mesentery infiltrated with masses of malignant growth. The utter hopelessness of the case was at once seen. The separation of the mass was continued as high up as possible, to a point which afterward was found to be the natural attachments of the stomach. What appeared to be the healthy stomach was found high up and in front closely attached to the tumor apparently in much the same way as had been the intestines beneath. At this point the common concensus of opinion of the surgeons operating, assisting and looking on was that the growth arose from behind the stomach; no suspicion as to its being the stomach being entertained by any one. An effort was made to separate the apparent stomach and the tumor at their point of adhesion but was soon desisted from on account of the danger felt of perforating the stomach wall itself if I worked too near it. The determination was then made to break boldly into the tumor several inches below its junction with the stomach, leaving part of it attached to that organ, remove the balance and thus gain room enough to close the abdomen and finish the operation. A favorable point was fixed upon where there was a sulcus and a finger was forced into the mass and swept freely from side to side. After proceeding for the depth of some inches the finger suddenly entered a cavity and in a moment the whole situation flashed upon me. With several fingers in

the cavity a bimanual examination quickly made my suspicions a certainty. The tumor was the stomach. The only healthy part of the organ was the small anterior portion presenting at the upper part of the wound and which had been mistaken for the lower part of the whole organ. This proved to be a portion of the anterior part of the cardiac end. I accepted the inevitable at once, continued my disections, removed all the large mass and quickly ligating bleeding points made an effort to form a pretense of a stomach of the small piece remaining of cardiac end, esophagus and gut, and closed the wounds. The patient lived about thirty-six hours, complaining of both hunger and thirst. He was given morphia hypodermically in sufficient quantity to keep him easy until his death.

All but a small portion of the stomach was involved as was also the mesentery throughout the whole abdomen. A large mass of disease was left high up and involving the esophagus. The omentum was not invaded.

From the manner in which this patient stood the shock of the manipulation I had no doubt at the time and have none now but that had there been sufficient healthy tissue at the esophagus to have allowed of a successful attachment of the gut to that canal the result would have been different. The whole posterior and lateral walls of the stomach up to, and extending some distance up the esophagus were involved. There was about two or three inches of the anterior stomach wall at the end of the esophagus comparatively healthy, but the conditions were such as to render my efforts to form a continuous canal futile.

GONORRHEA.

A Clinical Lecture to Members of the American Medical Association Delivered in the Medico-Chirurgical Hospital of Philadelphia.

BY JOHN V. SHOEMAKER, M.D., LL.D.

PROFESSOR OF SKIN AND VENEREAL DISEASES IN THE MEDICO-CHIRURGICAL COLLEGE AND HOSPITAL OF PHILADELPHIA.

PHILADELPHIA, PA.

ACUTE GONORRHEA.

This young man has suffered from acute gonorrhea for six days. It is his first attack. The period of inoculation was three days. There is an abundant discharge and intense pain on micturition. The prepuce and scrotum are greatly swollen.

A second man presents analogous symptoms and history. Four days after exposure he was attacked by sharp, stinging pain upon passing urine. A discharge, thin at first but which rapidly became thick and copious, soon developed. The disease has now been fully established for five days. There is some tenderness in both testicles and he has been troubled by chordee.

There need seldom be any difficulty in the diagnosis of gonorrhea. The muco-purulent discharge excited by the presence of a urethral chancre is sometimes sufficiently abundant to simulate gonorrhea. A chancre in that situation, however, can be readily recognized by the induration which it produces. The purulent flow in pyelitis may be so constant and profuse as to resemble a gonorrheal discharge. In pyelitis we have a history of pain in the back, febrile movement, vomiting and attacks of nephritic colic. The escape of pus in pyelitis is unaccompanied by urethral pain.

Gonorrhea is an exceedingly common disease and all are familiar with its ordinary manifestations, complications and consequences. Its rapid extension along the urethra, the inflammatory engorgement and edema, the chordee, phimosis, paraphimosis, balano-posthitis, epididymitis and arthritis by which it may be accompanied, are features presented to our notice every day. There are certain less frequent phenomena which we should bear in mind as regards this disease.

Gonorrhea attacks indifferently any mucous membrane with which its virus comes in contact. We must not allow ourselves to be deceived by the unusual characters of some cases which we are called upon to treat. The victims of gonorrhea, acquired in the usual way, are generally frank to the extreme in their confessions. It is otherwise, however, with those who have participated in unnatural practices. In such cases we are ordinarily compelled to rely upon our own sagacity. If a suppuration of a mucous membrane is abrupt in its onset, virulent in its nature and destructive in its effects, we would be warranted in at least suspecting the influence of gonorrhea. Light may be thrown upon the case also by the occupation and habits of the patient. Gonorrhea of the rectum may occur either from the abundance of the discharge and the transmission of, particularly, a vaginal infection to the anus and rectum or it may result from sodomy or pederasty. The ophthalmia excited by contact with gonorrheal virus in the child during birth or in the adult from gross carelessness, is a not infrequent incident. Gonorrhea of the nose may arise from similar circumstances. Edwards observed a case of a widow 60 years of age, who was affected by blowing her nose in the suspensory of her son who was suffering from gonorrhea. Other cases of nasal infection have been reported. In acute cases the nose becomes enormously swollen and the skin red, shining and painful. The face and upper lip are likewise tumefied. There is an abundant discharge, which causes ulceration of the lip. Ziem and Cozzolino are disposed to admit that the purulent rhinitis of the new-born may, like the purulent ophthalmia, be a manifestation of gonorrheal infection acquired during birth. Gonorrheal infection is sometimes encountered in adults as a result of unnatural vice.

During the second stage, inflammation sometimes spreads from the posterior urethra to the follicular structure of the prostate gland, causing a painful enlargement and obstruction to the outflow of urine. This acute prostatitis usually terminates in resolution, though suppuration may occur. At the same time the neck or fundus of the bladder may become involved. In other cases the disease extends to one or both of Cowper's glands, giving rise to much throbbing pain. The deferentia and vesiculæ seminales may likewise be attacked. The former is recognized as a hard, thickened, painful cord, occupying the position of the inguinal canal. The seminal vesicle is swollen and painful.

Since the demonstration of the gonococcus as the active cause of gonorrhea our knowledge has become more exact as regards the constitutional complications which sometimes take place. A formidable list of such occurrences has gradually accumulated. Prior to the discovery of the microbe the septic origin of "gonorrheal rheumatism" had been suspected. This not unusual complication is now brought into more intelligible relation to the primary disease. Suppurative arthritis is occasionally observed in consequence of gonorrhea. In connection with this subject it is of interest to note the study by M. Achard of gonorrh-

eal arthritis by means of the Roentgen rays. In a patient who had had several attacks of gonorrhea, each being complicated by articular trouble, considerable deformity of the bones of the toes was found. The periosteum and bone were both affected, and in one spot an osteophyte was observed. Inflammation of the crico-arytenoid articulation of the larynx has been seen as a result of gonorrhea.

Of late years quite a number of cases of endocarditis due to gonorrhea have been reported. Prof. Albert Abrams of San Francisco has related the history of a boy 17, who on the fourteenth day of a gonorrhea was attacked by cardiac manifestations. There was distressing tachycardia with a feeble systolic murmur over the aorta and an increase in the area of superficial cardiac dulness toward the right side. Two days later the patient died. The endocarditis had not been preceded by gonorrheal rheumatism; the previous history of the lad was one of perfect health and absolute integrity of the heart. Dr. Siegheim has recently reported a fatal case of ulcerative gonorrheal endocarditis. Arthur Loxton has placed upon record a case of death, apparently due to acute septicemia in a patient afflicted with gonorrhea, the fatal issue taking place about a month after the venereal disorder had been contracted. Another fatal case was observed by M. Combemale. After gonorrhea had lasted for two months infectious rheumatism of several joints supervened. A few days later nephritis developed and the generalized infection was suddenly terminated by purulent bronchitis and parotiditis.

Pleurisy has been witnessed during the course of gonorrhea. This complication is usually mild, of short duration and may either be dry or attended by effusion.

Myelitis, paraplegia and muscular atrophy have been reported as consequences of acute gonorrhea. Professor Pitres has published an account of a patient suffering from acute gonorrhea who had painful swelling of some joints on the day after admittance to the hospital, and who later in the same day was attacked by right-sided hemiplegia and coma. Six weeks later he was seized with Jacksonian convulsions, in which he died. A very extensive softening was found in the region of the Sylvian artery but no atheroma could be discovered.

In the female, gonorrhea lays the foundation of a series of the gravest ailments of the womb, tubes and ovaries. We should therefore be deeply impressed by the fact that in neither sex is gonorrhea a disease to be lightly esteemed. We have learned that in its immediate and ulterior consequences it is a most prolific source of physical suffering and mental unhappiness.

Returning to the patients, victims of ordinary, every-day clap free from complications, we should wish to direct their treatment in such a manner as to safeguard them as far as we may against the development of possible complications and sequelæ. The more successful our management now the better the outlook for our patients' future. Since the discovery of the gonococcus, the renewed study of the natural history of gonorrhea as an infection and the general adoption of antiseptic methods, we are prompted to ask ourselves whether any improvements upon the older modes of treatment have been devised.

The chief aim of treatment is to destroy or paralyze the bacteria, or at least counteract their virulent products. The time honored blenorrhetics and injections possess a certain degree of germicidal and antiseptic power. Have we gained any new remedies or learned any new procedures by which we shall be able to hasten and perfect a cure? Gonorrhea has been acknowledged a difficult disease to cure permanently, as for a considerable period after all discharge has been suppressed a relapse may occur upon slight provocation.

One drug brought into use in recent years has proved a meritorous addition to our armamentarium, viz., salol. A combination of salicylic and carbolic acid, salol must evidently possess valuable antiseptic properties. In its escape from the system it exerts a beneficial effect upon the urethral mucous membrane. A second drug which acts in a similar manner in these cases is terebene, a derivative of turpentine. I am much in the habit also of prescribing in acute gonorrhea small doses of belladonna, which has a good influence upon the urethral glands.

For the first patient I shall order terebene, to be given in 0.31 c.c. increasing to 0.62 c.c. doses four times a day. On account of the edema he shall also have 0.06 increasing to 0.12 c.c. every two hours, of tincture of aconite. The second patient shall take 0.32 gram of salol, combined with 0.12 c.c. of the tincture of belladonna and 0.31 to 0.62 c.c. oil of sandalwood four times a day. For the erections I shall order a suppository containing 0.016 gram extract of belladonna with 0.32 gram of monobromated camphor. As regards local treatment I shall adopt what is known as Janet's method. This consists in the copious irrigation of the urethra and bladder with a 1 to 1000 or 1 to 2000 solution of potassium permanganate, a quart or more of the fluid being passed in at each sitting and the operation practiced every day for ten days or two weeks. The solution is made to flow by gravity from a large receptacle through a rubber tube connecting with an ordinary urethral syringe. This procedure is much more efficient in removing inflammatory products from the urethral crypts than the old practice of small and repeated injections made by the patient or even by the physician.

In association with the medical treatment I lay great stress on repose of body and mind, abstinence from liquors, highly seasoned foods, etc.

CHRONIC GONORRHEA.

I have likewise present three patients in whom gonorrhea has become chronic. The first man is 28 years of age. He contracted the disease ten months ago, submitted to treatment for about a month and was nearly free from discharge. Becoming impatient of the restrictions imposed upon him he then "threw physic to the dogs" and abandoned himself to a careless life. Since that time he has almost continually been afflicted by some degree of urethral leakage. At times it would almost disappear; then some imprudence in eating or drinking, exposure to cold or venereal excitement would cause a return of the flow. He comes here today in one of these periods of recrudescence. The discharge is moderately abundant and distinctly purulent. There is some pain on passing urine. During his intervals of comparative freedom he sometimes sees no discharge for several days; then he will perceive a few drops of thick pus escape from the meatus in the morning, or he can express it from the urethra when some hours have passed since the act of micturition.

A second man, 27 years of age, had a first attack of gonorrhea five years ago, and eighteen months ago he contracted a fresh case. The latter was undoubtedly

due to re-infection, as it began four days after impure connection, was accompanied by a free discharge, pain in the urethra, swelling of the penis and complicated by epididymitis. Six weeks ago the man again cohabited for the first time since his second attack, and for two weeks indulged freely in intercourse. The result was a return of discharge, which is now rather abundant.

A third patient is 40 years of age. Eight months ago he contracted gonorrhea for the third time. He appeared to recover entirely and was untroubled until a few days ago when a dietetic excess brought back a scanty discharge.

These cases illustrate the difficulty of obtaining a radical cure of gonorrhea, the persistence of a slight discharge and the readiness with which an exacerbation is excited. From the medical point of view there are two features of special interest connected with chronic gonorrhea. One is the danger of communicating the disease, the second is the tendency to the formation of stricture.

We understand the subject of the transmissibility of gonorrhea better now than we did a few years ago. The study of gonococcus has cleared our conceptions. What formerly could be only a suspicion or belief founded upon clinical evidence can now be made an objective demonstration. From bacteriologic study we now know that the microbes long survive in the urethral crypts and cells, that however attenuated they may become they remain susceptible, under favorable circumstances, of reviving into activity. Deposited upon the mucous membrane of the female genital tract they are capable of exciting a gonorrheal catarrh which, though often more insidious than an acute attack, is followed by a more permanent and injurious effect.

It is scarcely possible, under the older and ordinary methods, to wash out thoroughly all the folds of the male urethral mucous membrane and to dislodge effectually the bacteria and inflammatory products. Consequently at one or more points along the canal inflammation lingers and bacteria survive. These spots are, on the one hand, starting points for exacerbations and relapses and, on the other, they are the first steps in the process of formation of strictures. These spots or patches are somewhat rough and often more or less completely denuded of epithelium and hence the name, "granular patches," by which they are known. The urethra at these places is morbidly sensitive, as is proved by the passage of a soft bougie. The low grade inflammation causes proliferation of the subjacent fibrous tissue. With the progress of time this tissue fulfills its law of contraction and the result is a gradual but progressive narrowing of the lumen of the urethra and a corresponding impediment to the exit of urine. Urethral stricture has a literature and surgery of its own and I have no time for comment upon such a broad subject. The prime consideration is that by well directed efforts in the acute stage and by local applications to the granular patches we may minimize the production of strictures.

I find upon examination that each of these three men has at least one granular patch upon the wall of the urethra. The second patient has two such lesions. The first patient is suffering now from what is almost equivalent to an acute clap. In his case I will have carried out a treatment applicable to the acute disorder until the manifestations have subsided, when I shall have recourse to direct medication of the patches in the same manner as in the other two cases. This method employs a syringe which holds 0.92 or 1.23 c.c., attached to a flexible catheter, which terminates in a bulbous nozzle. The solution to be used is placed within the syringe, the granular patch is located by means of the *bougie à boule* and the medicated fluid can then be deposited exactly upon the surface of the lesion. Before performing this operation the bladder of the patient should be evacuated. An application of this kind is made two or three times a week. This is a procedure to which I often resort with very satisfactory results. Various substances may be used. I often apply in this manner a solution of silver nitrate, beginning with a strength of 0.32 to 0.65 gram to 29.5 c.c. water and gradually increasing according as it is tolerated. Copper sulphate also makes an excellent application and this is the remedy which I shall use today, taking first a 5 per cent. solution and increasing the proportion to 10 per cent.

LECTURES ON TUBERCULOSIS OF THE KIDNEY.

BY CHARLES GREENE CUMSTON, B.M.S., M.D.
Assistant Professor of Surgical Pathology, Faculty of Medicine, Tufts' College, Boston; Fellow of the American Association of Obstetricians and Gynecologists; Corresponding Member of the Association of Genito-Urinary Surgeons of France, of the Pathological Society of Brussels, of the Electrotherapeutic Society of France, etc.
BOSTON, MASS.

LECTURE I.

Tuberculosis of the kidney occurs in two forms, viz., miliary granulations and tuberculous infiltration of the kidney. The first form is a medical tuberculosis, while the second is more or less surgical.

Durand-Fardel has described a special form of renal tuberculosis. He saw a case in which he found great quantities of bacilli but which had not produced any pathologic change in the kidney; the glomeruli contained Koch's bacillus in their capillary loops, but the organism had not had sufficient time to produce irritative lesions, for all the renal tissue was found normal, even the structure of the glomeruli was healthy. Some vessels which were packed with bacilli to such an extent that under a lower power their cavity appeared like a red speck, were also normal and no trace of cell proliferation could be detected around them. Daunic has reported a similar case. Death occurred with great rapidity and at the autopsy large quantities of bacilli were found in all the organs, especially in the kidneys.

Miliary granulations are frequently found in the kidney. Tuffier thinks that they are an epi-phenomena of a general infection. According to Rayer they are found in the cortex, sometimes in the medullary substance. When in the cortex, they are disseminated or form whitish-gray tracts running from the periphery toward the center and following the direction of the renal vessels. Lecorché gives the same description. The granulations are localized in the neighborhood of the arteries which separate the pyramids of Farrein. Following the arteries longitudinal series or groups of tuberculous granulations are to be seen.

Topographically, the granulations predominate in the cortex, because the blood current is slow in the glomeruli and in the intertubal spaces, and for this reason the bacilli find much difficulty in their progress

forward without joining colonies in a region very favorable for their development.

Miliary granulations vary in diameter from 1 to 2 mm. Usually they are isolated, of a white or yellow color, easily dissociated and form on a cover glass small granular bodies. When in the state of small tubercles they sometimes present the aspect of a small, irregular whitish plaque. With the naked eye the surrounding parenchyma appears normal or as if a slight hyperemia were present. Microscopically, tuberculous follicles and elementary nodules with giant cells are found. The bacillus is always to be found, sometimes in great number. They are seen in groups in the interior of and around the epithelial cells. Often, however, the bacilli are few in number, one or two being found in each giant cell.

If you examine a preparation you will remark that, all about, the renal parenchyma has undergone a marked denutrition, the tubes have desquamated and their flattened epithelium shows that they are inactive. Others only show a decrease in the diameter of their canal, with sclerosis of their walls; some are even completely retracted and only contain the remains of their epithelium in the form of granular fatty débris. The glomeruli look like rosy spots and too small for their enveloping capsule. They are inactive and are only simple fibrous cicatrices. A tubercle can become fibrous in the kidney as in any other organ and is then composed of connective tissue elements in a state of hyperplasia. From the tubercle start off fine fibrous bands which extend into the surrounding parenchyma, thus binding it intimately with the tubercle.

In the case of large miliary granulations, the neighboring renal tissue is far more diseased and several granulations may be distinctly seen in one tubercle. Between the tubercles connective tissue bands alternating with embryonal cells are found while the kidney tissue has completely disappeared. The majority of these granulations are caseous. In their center a nearly homogeneous tissue made up of degenerated cells is found. These granulations are usually grouped around an artery.

This miliary tuberculosis appears during the progress of an acute infection with fever, as is so often seen in children. Usually it coincides with a tuberculosis of both kidneys and the spleen. Nevertheless, these tubercles are found in the adult during a pulmonary tuberculosis, but incidentaly only, so that clinically they can hardly be taken into consideration.

To sum up it may be said that there is no constant localization for tuberculous granulations. They occupy indifferently the peri-vascular tissue, the track of a vessel, a glomerulus or a space corresponding to several renal tubes. The tuberculous tissue has the same characters in the kidneys as in any other organ. Caseification and the vitreous aspect occur early and the giant cells appear soon after. When the granulations develop in large numbers in a localized spot or in the entire kidney they rapidly run together, undergo caseous degeneration, and thus give rise to more or less extensive destruction of the renal tissues.

This leads me to the study of tuberculous cavities and infiltrating tuberculosis.

Since the writings of Bayle, Roger, Lecorché, Guyon, Reclus, Tuffier, Newman and many others, we know the surprising shape, size, etc., that a tuberculous kidney may present. We will divide this form of tuberculosis into the four following varieties, viz.: 1, nodular infiltration; 2, tuberculous pyelo-nephritis; 3, massive degeneration of the kidney; 4, tuberculous hydronephrosis.

Nodular infiltration is characterized by round masses of a yellowish-gray color, sometimes projecting above the surface of the organ. The kidney is not entirely invaded, only part of its parenchyma being the seat of disease. Sometimes the disease is seen in the form of a small tumor on the surface of the kidney, whitish-yellow in color and firm in consistency, but when caseification is about to occur it is soft to the touch. At other times the disease occurs as a large mass, deeply seated in the renal tissues, while at the surface of the organ it projects, its surface being more or less irregular. Occasionally a series of smaller confluent nodules are found, hard and white in formation, those undergoing degeneration melt in a granular mass contained in the excavations hollowed out in the parenchyma of the kidney. The nodules are consequently multiple, some being hard, some caseous.

Tuberculous pyelo-nephritis is rather more of an accident due to a peculiarity in evolution than a special form of the disease. These foci of nodular infiltration soften and break down and empty into the pelvis of the kidney. This is consequenty a modification of the nodular variety, or as I might express it, the ultimate stage of nodular infiltration.

It is in these cases that the kidney is destroyed by the irregular cavities with indurated and ragged borders. From these cavities certain products are expelled which give rise to the formation of an enormous amount of pus. The kidney is filled with cavities increased in size and misshapen. It has a whitish, lardaceous aspect and when cut open exposes the numerous cavities which open into each other or communicate with the calices and pelvis of the kidney. The capsule of the organ is very adherent over these cavities and is adherent to the peritoneum and quadratus lumborum as well.

Microscopically, three zones may be distinguished: 1, an internal zone made up of the débris of caseous elements; 2, a middle zone of tuberculous infiltration having a tendency toward sclerosis; 3, an external zone composed of embryonal tissue. If you remove the caseous matter which is often very adherent to the walls of the cavities, you will remark that the walls are smooth, resistant and form true pyogenic membranes, surrounded by a fibrous tissue. The caseous matter does not contain the bacillus and is simply made up of degenerate cells.

The walls of the cavities are formed by a network of connective tissue, which varies greatly in different parts. In some places the connective tissue fibers are close together, while at others a simple mass of embryonal cells is all that can be discovered. It is a pyogenic membrane because it has embryonal cells, giant cells and numerous vessels of new formation.

These foreign and at the same time destructive elements finally reach the neighboring renal tissue, pressing upon the tubes, invading them by means of the agglomeration of embryonal cells and newly formed vessels, which are more highly organized than in the walls of the cavity but whose fragile tissues easily break down. Other parts of the renal tissue may undergo fatty degeneration of the epithelium as well as amyloid degeneration of the glomeruli.

Massive degeneration of the kidney.—In this case, the renal tissues no longer exist; they are only repre-

sented by a thin and transparent membrane which contains a solid thick mass, very similar to putty or to the contents of a dermoid cyst.

This enveloping membrane sends off branches which incompletely divide the tuberculous mass. The caseous matter is sometimes very considerable in amount and may reach such dimensions as to obliterate the ureter. The exit of pus, urine and caseous débris being no longer possible they accumulate and distend the kidney to an extreme degree.

Tuberculous hydronephrosis is the result of this compression of the ureter, and in no way differs from the aseptic dilatation of the kidney. A membrane, sending off incomplete divisions, the contents of which are a yellow transparent liquid, is all that is found. The bacillus of tuberculosis is found in this fluid when inoculated into animals.

The kidney tissue is not so diseased as in the preceding varieties, it being especially distended by obliteration of the ureteral orifice. The ureter is increased in size, its walls thickened and indurated, while its lumen is either filiform or absent.

The process of cure may stop the progress of the lesions and if it declares itself in its various ways a true calcification is seen to take place. The caseous mass becomes thicker and is transformed finally into calcareous masses.

The lesions in the neighboring tissues are perirenal tuberculous abscesses. As a primary lesion they are infrequent but secondarily they often follow a tuberculosis of the kidney. Adhesions may form between the kidney and the intestines, vena cava and other viscera.

The ureter is not always attacked but usually it is somewhat infiltrated or thickened, while the mucous membrane is exfoliated and the lumen of the canal choked with débris.

Such are the principal forms of tuberculosis of the kidney. It may occur in the form of small single, grayish, semi-transparent granulations, forming a confluent or discrete eruption in the entire organ. At other times it forms larger masses, a kind of small caseous tumor whose aspect and consistency varies according to the age of the lesion.

In the acute form, the granulations do not evolute on account of the rapid progress of the disease. In the chronic form, the disease forms large masses which may undergo caseous softening and then form real tumors of various sizes, or it may produce multiple cavities which burrow to such an extent as to render the walls transparent and transforming the kidney into a vast focus of disease.

The capsule often becomes infiltrated and the calices, pelvis and ureter are invaded by the neoplasm. They become thickened in their turn, and finally ulcerated; then they are distended and dilated by the urine which is prevented from flowing through them.

I now call your attention to experimental tuberculosis. In infectious diseases renal lesions are often found, due sometimes to bacteria, at others to the toxins that they secrete. When bacteria become localized in certain tissues they secrete poisons or toxins which, when absorbed and spread throughout the economy by the lymphatics and blood, produce changes in other parts.

As I have already pointed out, the bacillus of tuberculosis may become localized and produce lesions in the kidney. Its toxins also cause lesions of the renal epithelium, and it is this particular point on which I wish to insist. We know the lesions due to the proliferation of this bacillus in the parenchyma of the kidney in man and this knowledge must be completed by experiments on animals.

Experimental tuberculosis of the kidney is realized as follows: *By intravenous injections*, which is not, however, a sure way of producing infection, but if it is secured it is only secondary. The granulations are not primary and demonstrate a recent dissemination of the bacillus; consequently the lungs, which act as a filter, should be avoided.

Direct inoculation of the kidney through the lumbar region has been practiced by Kostenich and Volkow, but as Borel remarks, this method has many defects. In the first place, it differs from the natural ways and it adds to the tuberculous process an intense process of repair which complicates the experiment.

Arterial injections in the carotid and aorta have been performed by Borel.

The question now comes, do the experimental facts confirm the theories established, on the pathologic anatomy of tuberculosis of the kidney? According to Virchow, the renal tubercle is made up of a lymphoid proliferation of connective tissue. The cellular elements of the gland only undergo a simple atrophy or a necrosis, but it is always the connective tissue which forms the soil in which the tubercles develop.

Baumgarten was the first to produce tuberculosis of the kidney experimentally. He injected the bacillus in the veins and studied the renal lesions which were secondary to the pulmonary tuberculosis thus produced. The first phenomenon which provokes the presence of Koch's bacillus is a karyokinesis of the fixed epithelial cells of the uriniferous tubes, of the endothelium of the capillaries and the elements of the wall of the glomeruli.

Later on, epithelioid cells are produced, and with such great rapidity in the uriniferous canals that they become completely obstructed. According to Baumgarten the proliferation of the fixed cells is the principal process of tuberculosis.

Kostenich and Volkow confirmed Baumgarten's results. They directly pricked the kidneys and three hours later found an intense polynuclear leucocythemia. Sometimes the bacilli appeared to be enclosed in the leucocytes, at others they appeared to be on the outside.

After twenty-four hours there was an intense karyokinesis in the cells of the canaliculi, while between them there appeared pale nuclei of various shapes which later resembled renal epithelial cells as well as epithelioid cells. According to these writers the latter were derived from the intercanalicular cells.

Borel obtained different results, for he never found the bacilli in the glandular tubes. From the very first, the bacilli were seized by the polynuclear leucocytes which accumulated in the dilated loops of the glomerular capillaries. Among these leucocytes irregular oval nuclei, surrounded by a granular protoplasm containing the bacilli, appeared on the third day. The nuclei and protoplasma belonged to monocellular elements. The same phenomena occurred in the intercellular tissue; these elements were distinctly different from connective tissue or endothelial cells.

The cells of the tubercle are stationary, movable elements and do not appear to result from a proliferation of pre-existing fixed, connective or endothelial cells. According to Borel, the tuberculous granulation is essentially interstitial and of lymphatic origin.

The epithelioid cells are the result of a natural evolution and development of the lymphatic cells localized in a given region of the economy. The tubercle is an accumulation of lymphatic cells.

The epithelium of the kidney plays no active part; it is only irritated by the process of atrophy or necrosis going on in the neighboring tissues. According to Baumgarten on the contrary, the karyokinesis of the fixed cells and renal epithelium is the predominating tuberculous process, while Borel claims the tuberculous granulation is a lymphatic formation, identical in all organs, which confirms Metchnikoff's theory.

The results of experiments differ consequently as to the intimate development, to the histogenesis of the primary elements, but they complete the histologic and pathologic facts that I gave in the beginning of this lecture.

They demonstrate that there is only one primary tuberculosis with a predominating glomerular or cortical localization; that there is only one granular tuberculosis scattered throughout the entire organ with a predominating perivascular localization. In both these cases the processus is always interstitial and the only active elements of the tubercle are the lymphatic tissues. The various elements of the kidney, particularly the renal epithelium, in no way enter into the formation of the tubercle.

Toxins of tuberculosis.—The study of the toxins of tuberculosis leads me to say a few words regarding tuberculous nephritis as well as amyloid degeneration of the kidney.

Bouchard, in 1881, was the first to draw attention to the infectious nephrites that accompany diphtheria, typhoid fever and tuberculosis. Later on Strauss, Cohnheim and Gaucher described the lesions found in the kidney, produced by these toxins. In 1886, Durand-Fardel demonstrated the presence of the bacillus of tuberculosis in the kidney and Coffin described tuberculous nephritis which, according to this writer, presented the characters of an infectious nephritis besides the direct tuberculous lesions.

There are other nephrites which are apparently not tuberculous, in this sense, that the simple tuberculous nodules or masses of caseous material are absent. Now, these nephrites produced by the presence of a tuberculosis are produced by the irritation caused by the elimination of tuberculous toxins. Bartels seems to have foreseen what experimental pathology has demonstrated, and Grancher and Martin when trying to obtain an antituberculous vaccination with old cultures, observed death from nephritis eight times, and they admit that the attenuated tuberculous virus contains a toxin which causes nephritis and paraplegia. Koch's tuberculin has caused nephritis many times.

Tuberculous nephritis.—The kidney presents marked changes in size, color and weight. Rayer described parenchymatous nephritis or the so-called "large white kidney." Siedallu believes that this form of renal disease frequently occurs in tuberculosis. According to Lancereaux, the contracted kidney of interstitial nephritis is more frequently seen in this disease. Of 281 tuberculous nephrites, Bamberger found the large white kidney 157 times, 47 times an acute nephritis and 77 times the atrophic variety. Generally the kidney is larger than normal and appears distended from the congestion of which it is the seat. The capsule is soft and is easily decorticated. The kidney is a dark bluish red, its surface being smooth and shiny.

Macroscopically the cortical substance is bluish in color as if it were undergoing fatty degeneration. The pyramids are distinctly seen, while the glomeruli are red and projecting. Microscopically two kinds of lesions are found. The first is a change in the epithelium which is only slight and during life does not produce albuminuria. In the second form albumin has been found in the urine during life and the lesions are far more extensive. Both forms are simply stages of the same processus.

Slight nephritis without albuminuria.—The glomeruli are only slightly diseased; the cells of Bowman's capsule are in proliferation. The endothelium of the vessels of the glomeruli are degenerated with minute drops of fat. Globules are present between the vesicular loops and the cavity of the capsule. In the tubuli contorti the cells are large, cloudy and swollen, while the epithelium is filled with drops of fat. The intertubular connective tissue undergoes a marked hypertrophy in tuberculous patients presenting an arterio-sclerosis.

Severe nephritis with albuminuria.—The microscopic lesions are similar to the preceding nephritis, only they are very much more marked. Degeneration of the collecting tubes is always present, while the caliber of the tubuli contorti is great, the latter are distended and tumefied, their epithelium is swollen and granular while in some parts it has secreted colloid masses which block up the lumen of the tube. Sometimes the epithelium undergoes cloudy swelling and secretes hyaline masses; the former is flattened, only forming a simple layer of cells with granular protoplasma. In the interior of the tubes are yellowish masses, sometimes having the epithelial cells detached; these are the casts.

The endothelial cells of the capsule are in active proliferation, filling the cavity with débris, while the glomeruli are in a stage of congestion, sometimes amyloid.

The description that I have given leads us to suppose that there really exists a tubercular nephritis and that it begins with the tuberculosis. This nephritis is frequent in the rabbit after vaccination with tuberculosis and has been observed by Grancher and Martin. Daunic also has seen them in his experiments.

Thus these lesions are probably due to the toxins of tuberculosis. Their frequency, their characteristic aspect, both of which are always present, is in favor of this opinion. The toxicity of the products of tuberculosis is complex, but from what I have said we may conclude that these nephrites are not always due to the presence of the bacilli in the kidney but are often due to irritation set up by the elimination of their toxins.

Amyloid degeneration.—Many diseases may give rise to this lesion and it has nothing specific about it. There is however an amyloid degeneration following tuberculosis and which has as pathognomonic cause a tuberculous infection. The kidneys present a special anatomo-pathologic aspect.

The glomeruli are semi-transparent and have a shiny waxy aspect which is characteristic. Iodin colors the glomeruli dark brown, while sulphuric acid gives them a dark violet hue.

In the beginning the lesion is almost entirely localized in the capillaries of the glomeruli, the former being thickened, but later the glomeruli are in total-

ity invaded, the lesion then being seated in the walls of the arteries. It is consequently by the vessels that the amyloid infiltration is set up. Weigert, Lecorché and others, think that the coincidence of amyloid degeneration and large white kidney (chronic diffuse subacute nephritis) is generally the rule, and that the amyloid infiltration is always an accessory lesion put into action by a former nephritis.

Although a vast amount has been written regarding this form of degeneration, we are as yet not quite sure to what factor it should be attributed. It was thought that a particular substance formed in abscesses, ulcers, tuberculous cavities, etc., resulting from the oxidizing action of the air on pus. This substance was considered a chemic poison produced by the influence of fermentation and was easily produced experimentally in animals by inoculating other toxins than those found in tuberculosis.

Thus it was that Charrin and Bouchard, by intoxicating an animal with blue pus and filtered cultures of the pyocyanic bacillus, produced amyloid degeneration in the breast and kidneys. The same results were obtained with tuberculosis.

We can thus suppose there is not direct action of the bacteria on the walls of the vessels. Perhaps amyloid degeneration is due to the toxins of tuberculosis in the pus, and the tubercles in different organs are surrounded by a thick layer of connective tissue which always undergoes amyloid degeneration.

I now come to the etiology and pathogenesis of tuberculosis of the kidney, which disease occurs at all ages but is more common in children and old people. Women are more prone to this disease than men. Of forty-three cases seen by Tuffier, twenty-nine were women and fourteen males. Vigneron published statistics of 133 operations for this renal complication, ninety-seven were performed on women and only thirty-six on men.

According to Roberts, the disease is more frequent between the ages of 30 and 40 years, while for Rosenstein it is more common between 15 and 30. Personally, I think that it occurs more frequently between 20 and 35, but Tapret reports a case of the affection in a man aged 97 and Glück removed a tuberculous kidney from a child of 3½ years.

The kidney is very rarely attacked by tuberculosis and Louis only found 5 cases out of 170 autopsies. Of 1317 patients dying from tuberculosis at the hospital at Prague there were 75 tuberculous kidneys. In children, according to Rilliet and Barthez, out of seventy-two autopsies, forty-nine cases of renal tuberlosis were found.

Generally speaking, renal tuberculosis is under the dependence of many influences produced by the general infection, and here as in other affections, we must take into consideration denutrition, contagion, heredity, etc.

The kidney like the lung is under the control of these various etiologic factors, which if they do not directly produce the lesion, admirably prepare the organ for the disease.

The starting point of tuberculosis of the urinary system has been the subject of much discussion. The pathologic anatomy that I have given, demonstrates that the infectious process is produced by Koch's bacillus. Now, the question is: Does the affection begin in the prostate and seminal vesicles, the bacilli attacking the kidney and bladder afterward; or is the bladder the first to be diseased, or is it the kidney?

Each organ of the genito-urinary system has in turn been supposed to be the primary seat of the infection and all ways of propagation have been admitted as possible. There are two principal theories, however: the first is that the tubercle forms in the testicle and epididymis, from whence it invades the other organs; while the second is that the infection begins in the kidney and from there attacks the other parts of the excretory system. Both are upheld, but if you closely observe the cases reported it will appear clearly that the disease commences in the kidney, and from this organ it penetrates the urinary tract, invading successively the ureters, bladder, the posterior urethra, the prostate, seminal vesicles, the vas deferens, epididymis and testicle.

If you find at an autopsy a renal tuberculosis of recent date, by that I mean miliary granulations, one is extremely sure to find the lesion farther down in the urinary system. Lecorché and Roger have especially found lesions entirely limited in the kidney; the secondary tubercles were only in the kidney, rarely did they find them in the pelvis or calices and still more infrequently in the ureters and bladder.

Le Dentu says that tuberculosis localized in the kidney is very infrequent, at least it is rarely reported. Now this local tuberculosis, which is a mortal danger, becomes generalized because from the kidney the bacilli infect the economy, causing a general infection. For a while this lesion, which is only in the kidney, remains local, but soon it invades the system and for this reason a renal tuberculosis is rarely met with at the autopsy. Consequently, Le Dentu admits that localized renal tuberculosis is theoretically explained.

This being admitted, we know that Cayla claims that genito-urinary tuberculosis follows the urinary tract downward; starting from the kidney it first invades the urinary, then the genital system.

Now contrary to Cayla, most writers believe in an ascending infection and it would appear that clinical facts of tuberculous infection, contracted during coitus, would plead in favor of this hypothesis. And do we not see and follow for many years patients with a tubercular prostate or testicle, who never have symptoms of a renal infection?

According to Hallé, the disease begins sometimes in the lower genital or urinary organs, the prostate or posterior urethra, afterward invading the bladder and kidneys, thus appearing to be an ascending infection of external origin. But this ascending infection is far from being in accord with the histories of most of the cases reported.

Oftener it is the bladder or the kidneys which are the primary seat of the affection, and other localizations of the disease are only secondary symptoms of a general tuberculous infection.

Daunic does not admit that the bacillus can penetrate into the kidney from coitus, and gives the following reasons, based on the practice of a number of eminent surgeons: Tuberculosis of the uterus is very rare, consequently the male can only be contaminated infrequently. Hillairet and Looten both report a case of tuberculosis of the glans penis, but in both cases the diagnosis was not absolute. Never before has a case of inoculated tuberculosis been reported on the penis, glans or anterior part of the urethra.

The seat of tuberculous lesions in the female genital organs does not seem to be that of one resulting from coitus; if this were the case, the tubercles would first occur in the vagina and cervix, which in reality

is very rare. The bacilli are, consequently, brought by the blood, as is proved by pathologic anatomy when it shows that the bacilli are more often found in the glomeruli, arteries of the kidney and in their walls, and also that the tuberculous granulations are either in the interior or neighborhood of the vessels. Consequently, according to Daunic, a renal, secondary to a genito-urinary tuberculosis, is as yet unexplained as regards its pathogenesis. The bacillus can penetrate the kidney by the blood and by the ureters from below upward, but what appears to be settled, is that the bacillus can not infect the kidney from coitus.

Besides a genito-urinary tuberculosis, there is another form which is diffuse, being pleural, pulmonary, genital, peritoneal, etc. In this case, we have what is termed "the medical tuberculous kidney." This term should not be employed in its exact meaning, for according to the indications, prognosis and progress of the lesions, a medical tuberculous kidney may become surgical.

In this case, in the pathologic point of view, the kidney may have had a primary focus of tuberculosis from which the bacilli penetrate the entire economy through the blood.

But the kidney may only be a secondary focus depending on lesions in the lungs, from which point the bacilli attain the kidney and become localized there, producing a lesion secondary to that in the lungs.

In the first case, we have a local primary tuberculosis of the kidney, producing a general infection; in the second, the primary lesion is in an organ other than the kidney and the latter is infected secondarily; consequently, tuberculosis of the kidney presents two different pathologic conditions, viz., primary and secondary infections.

As to its starting point the majority of reported cases seem to show that the seminal vesicles and prostate with secondary infection of the bladder and kidney is the more frequent manner of infection. Tuberculosis of the kidney *ab coitu* should be rejected as impossible, for the kidney only may be the primary seat of the process and this localized primary tuberculosis of the kidney can progressively infect the ureters and genito-urinary system.

Regarding the way in which the kidney is attacked by tuberculosis, Wesens believes that the bacilli are more frequently present in chronic tuberculosis than in the acute form. Now we know, according to Cornil, Baumgarten and others, that it is precisely in the miliary form, in acute attacks, that the specific organism of the affection is found. Baumgarten found the bacillus in the tubuli contorti and believes that they come from the neighboring capillaries. Durand-Fardel saw them in the glomeruli and interior of the renal vessels. Consequently the transportation of the bacilli is accomplished by the arterial circulation.

Probably the organism invades the glomeruli and also the various parts of the cortical substance. The tubercle extends in size from its periphery, and in this extension the cells of the tubuli contorti play the most important part. The bacillus imitates the cells; the nuclei of the epithelium presents karyokinetic forms; new cells form and accumulate, while the walls of the tubuli contorti give way to this pressure. The neighboring granulations melt together and soon after the epithelioid cells take on the aspect of embryonal elements.

Brault gives the following description: When a uriniferous tube is invaded by the bacilli the cells, after a short irritation, become swollen, caseous, and form a protoplasmic mass, in the center of which Koch's organism is sometimes found.

More often, however, fine granulations in which the lymphatic cells are predominant, fill the intertubular spaces and contain giant cells.

Large tubercles often succeed the elementary ones and it may be admitted that the former arise from microbic emboli. The distribution of these emboli is irregular, as they occur in any part of the kidney and genito-urinary system.

To sum up, we have a primary tuberculosis of the kidney in patients who have never presented any other symptom of bacillosis, the starting point being in the kidney or bladder. The infection occurs by the blood. From the cortex the processus invades the medullary substance, the pelvis of the kidney, ureter and bladder.

The secondary form occurs in subjects presenting tuberculous lesions in full evolution, the primary focus being in the lungs, joints, lymphatic glands, or one of the genital organs of man. The primary lesion is often in the bladder, the lesion of the kidney taking place by ascending infection. In some cases there may be a secondary renal tuberculosis, terminating with a secondary descending tuberculosis of the urinary organs.

(To be continued.)

DISEASES OF THE CONJUNCTIVA IN RELATION TO DISEASES OF THE NASAL PASSAGES.

Presented to the Section on Laryngology and Otology at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June, 1-4, 1897.

BY ROBERT N. KEELY, M.D.
PHILADELPHIA, PA.

It is only recently that the relation of cause and effect which exists between nasal affections and those of the conjunctiva have begun to attract attention. That this relation does exist there can be no doubt, but it has not been properly appreciated.

The obstinate and unsatisfactory course which many cases of conjunctivitis pursue is well known; it usually means a long period of suffering and disability to the patient and a wearisome, unresponsive and unsatisfactory treatment on the part of the physician. The practical discovery of the dependence of conjunctival disease on that of the nasal cavities is due perhaps more to the nasal than to the ophthalmic surgeon. This was due not so much to the lack of ability on the part of the oculist as to the immense advances recently made in the domain of nasal surgery. Previous to these, although it was known that the nasal mucous membrane as well as the ocular was affected, still the means of treatment were practically restricted to the former. Until the last decade physicians, as a rule, had comparatively little knowledge as to the treatment of the nasal portion of the diseased tract. In fact so little was known that any existing departure of the nasal cavity from a state of health could not be recognized or diagnosticated. It was not known what constituted health and what disease. As, however, the nasal surgeons began to recognize and master nasal diseases it was found that in so doing they often encountered cases in which an accompanying ocular

inflammation cleared up without any special treatment having been directed to it. This served to attract attention to the causal relation existing between the two affections; also the ophthalmic surgeon seeing the advances made by his nasal colleague, and his success in the treatment of the hitherto rebellious nasal troubles, sought his aid more frequently, particularly in affections of the lachrymal duct and sac where the connection of the two affections were most serious and most evident.

It had long been known that conjunctivitis was often dependent on diseases of the lachrymal duct and sac, and when these had been shown to be often dependent on trouble within the nose, it followed as a matter of course that conjunctivitis could likewise be due to extension of the inflammation from the nasal cavity.

The inquiry once having been raised, the advanced state of nasal surgery was able at once to solve the questions presented by the oculist. It was found that the nasal mucous membrane was a most sensitive structure and rapidily responded to and resented all forms of irritation. Inflammatory evidences in the conjunctiva were preceded by sneezing and swelling of the Schneiderian membrane in acute cases and the nasal symptoms preceded the ocular ones. In chronic cases it was found that the turbinated tissues were hypertrophied, that cartilaginous and bony spurs impeded the free passage of air; that deviations of the septum also acted as an obstruction, and tended to the accumulation of mucus and favored the establishment and aggravation of catarrhal troubles. The proof, however, of the causative action of nasal affections on ocular ones was the disappearance of the latter on the removal or cure of the former. The whole question is one of such recent date that notwithstanding its satisfactory solution, it has not received the attention of ophthalmic surgeons that it deserves.

In our text-books particularly, the references to nasal trouble as a causative factor in conjunctivitis is not sufficiently insisted on nor its action explained. Neither are sufficient details of treatment given to enable the practitioner to relieve those cases of conjunctivitis which can only be cured by properly remedying the coexisting nasal affection on which it depends. It is not to be expected of the oculist that he shall undertake the sole treatment of the nasal troubles, but he should have such a knowledge as will enable him to properly examine and recognize abnormal conditions, and even if circumstances require, to conduct the treatment of the milder forms. In many cases the treatment must be carried out in conjunction with a colleague skilled in nasal surgery, and this will often prove the most efficacious and derirable plan.

The following cases may serve to show the association of nasal and ocular troubles:

A man aged 36 years had a violent inflammation of the left eye associated with discharge from the nostril. The eye was swollen almost shut, and the examination showed the mucous surface of the lids covered with a layer of false membrane which was easily stripped off. The right eye was not affected. The patient had had a traumatic deviation of the nasal septum for which he had been operated on two years previously. While considerable breathing space had been obtained, an ulcerated surface had persisted ever since. He had suffered for three or four years from slight attacks of hay asthma. These followed the injury to the nose and existed previous to the operation. The discharge from the nostril was thick and tenacious and excoriated the lip.

A false membrane covered the entire nasal mucosa and extended down into the naso-pharynx. Dr. Kyle examined the membrane bacteriologically but failed to find any Klebs-Loeffler bacilli, only streptococci and staphylococci. It was supposed the disease was a streptococcus infection, and that the eye had become secondarily involved through the medium of the nasal duct. The nostril was carefully cleansed with an antiseptic saline solution, and the ulcerated surface touched with toluol and sesquichlorid of iron of six parts to a hundred of water. The eye was washed with a boric acid solution and the nostril thoroughly cleansed every two hours with biborate and bicarbonate of soda, carbolic acid and cinnamon water and glycerin and water. There was a slight re-formation of the membrane in the eye, but none in the nostril except about the points of ulceration of the septum. The condition cleared in forty-eight hours, a mild attack of hay asthma persisted, however, for several weeks.

Another case was that of a girl aged 16 years. She suffered from a flow of tears from the right eye. She took cold easily and then the right nostril would suddenly close and a flow from the eye would begin and continue until breathing was re-established. Examination of the nose showed enormous thickening of the mucous membrane of the middle turbinate. This swollen membrane occluded the nasal duct by pressure. The condition had existed for three or four years. The duct had been probed from above and several eye washes had been used. A portion of the middle turbinate was removed together with the thickened tissue, and although a year and a half has elapsed since the operation there has been no return of the former symptoms.

The last case is one of a child aged 3 years. Both eyes were affected; the lids were red and granular and discharging a fetid pus. There was also a purulent rhinitis. Under an anti-strumous treatment of syrupus ferri iodi and the hypophosphites with a 0.0027 gram of the double sulphid of arsenic and a local application of boric acid, the eyes cleared up promptly.

1823 Vine Street.

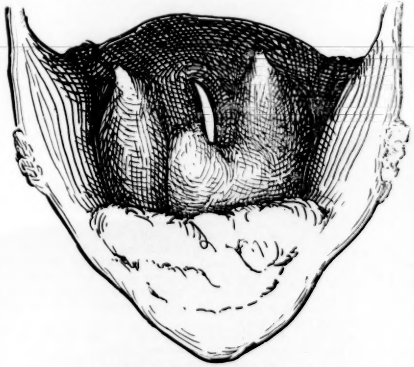
REPORT OF A CASE OF MALIGNANT GROWTH IN THE LARYNX; TOTAL EXTIRPATION, SOLIS-COHEN METHOD.

Presented to the Section on Laryngology and Otology at the Forty-Eighth Annual Meeting of the American Medical Association at Philadelphia, June 1-4, 1897.

BY ROBERT C. MYLES, M.D.
NEW YORK, N. Y.

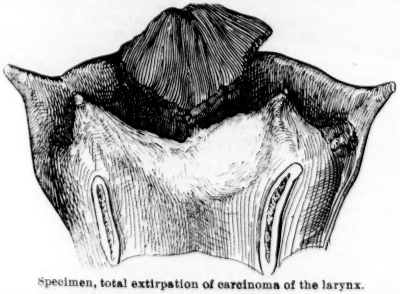
James Eckersley, age 49, machinist, worker in the emery room of a sewing machine factory, was sent to me Aug. 7, 1896, for diagnosis and opinion concerning the condition of his throat. He complained of loss of voice, sore throat, sore chest, cough, difficulty in breathing, poor appetite, weakness and night sweats. The cough had troubled him from time to time for thirteen years. He was able to sing up to three months since; then he became hoarse, and has remained so up to date. I found a large growth in the larynx, which was attached to the right vocal chord and the adjacent anterior and inferior parts, and extended

across the anterior commissure. The larynx was dilated to an extreme degree by the formation. There was a small opening in the respiratory space between the arytenoids, and there were two abrasions on the top of the tumor, apparently caused by forceps in an attempt to obtain specimens for microscopic examination. I reported that the characteristics were those of malignancy, and that I would advise the removal of a deep section of the growth for microscopic examination. This was accomplished with Krause's double curette, it being the opinion of the writer that Mackenzie's cutting and Schroetter's tube forceps are not



Specimen, carcinoma of the larynx.

reliable in making deep sections of laryngeal growths. I also advised that an immediate operation of total extirpation should be performed in the event that the diagnosis was corroborated and confirmed. Dr. Vissman made a microscopic examination and reported that the tumor was a carcinoma. I advocated the Solis-Cohen operation. This was performed by Dr.



Specimen, total extirpation of carcinoma of the larynx.

J. A. Bodine Aug. 17, 1896, preliminary tracheotomy having been performed several days previously. After the patient had been anesthetized an incision was made in the median line from the hyoid bone down to the tracheotomy wound; no cross incision was made. The parts were dissected on either side from the thyroid and cricoid cartilages. The bleeding was slight, and was stopped by compression or ligature; chloroform narcosis was continued through the tracheotomy tube. The trachea was cut through at the point of junction with the cricoid, and was pulled outward and downward, great care being taken to prevent the blood from entering through the severed end. Then the larynx was lifted upward and dissected from the esophagus, constrictor muscles, crico-arytenoidean folds and the epiglottis. The esophageal and epiglottic surfaces were brought together firmly with catgut. The external excision was closed with sutures down to the lower part. The end of the trachea was stitched to the skin above the supra-sternal notch and also on the sides. The patient was fed by mouth for a few days, when the catgut gave way and allowed the milk from the pharynx to enter the wound. He was fed by a tube through the mouth after this for a time. The patient improved gradually; but at times he had attacks of profound nervous depression, with expressions of great fear of suffocation, and an indisposition to take food. The trachea receded and dragged the skin inward and became quite narrow. This was kept open by different forms of tubes; the Simrock nasal speculum was the most feasible. The tracheal walls became dry and abraded, and the patient suffered much from mucous and bloody crusts. A spray of liquid albolene with carbolic acid and eucalyptol gave him great relief. The opening became so tight that it was necessary to excise a part of the tissue where the skin and trachea unite. The communication between the wound and the pharynx gradually closed. Within a few days it was noticed that he could whisper certain words. His speech has made gradual and favorable progress. It would seem that his method of voice production is not exactly like that of Solis-Cohen's famous case. His patient had a pocket in the upper esophageal region and emitted regular puffs of air as is done in ordinary laryngeal speaking. In this case the voice seems to be produced mainly from the air being forced, by pressure of the muscles over the roughened edges of the glosso-pharyngeal region, and in this way producing enough vibration for whispered speech to be made by the tongue, lips, teeth and palate. I can not detect the slightest symptom of recurrence of the growth. He has gained rapidly in weight. The epiglottis has rather a normal appearance and position.

46 W. 38th Street.

DISCUSSION.

Dr. J. SOLIS-COHEN—My case was operated on six years ago, and was doing well last year. He had a very large external growth, and I had to remove much of the skin with it. I believe that this is the ideal operation for the removal of these growths. Tracheotomy should be done ten or twelve days in advance, enabling the patient to become accustomed to breathing through the neck. This affords time for certain adhesions between the trachea and the skin, and this process, anchoring the trachea, renders the laryngectomy easier. Some few months ago, in reading a report of the Laryngological Association of Great Britain, I was impressed with the large number of successful cases presented at one meeting. I learned that most of these had been performed under chloroform and I think that is the best anesthetic in such operations. With ether there is more or less bronchial irritation and also vomiting after operation, and much of this can be obviated by the use of chloroform.

In my case I concluded that the voice was produced by the horizontal fibers of the inferior constrictor muscle of the pharynx. That patient learned to distend the sac by half swallowing the air, and if this man will learn to do the same, he will probably be able to produce a phonal sound, instead of the labial one. My case seems an example of the old idea that function precedes structure. Here was a man whose larynx had been removed, and who wanted to talk, and in the effort to talk organs connected with a different function were forced into use to accomplish the result. My patient is not able to do hard manual work, for he can not close his glottis, and an expiratory current of air can not get the leverage necessary for hard work. In the act of defecation it is necessary to close the glottis. He

was obliged at one time to occlude the orifice externally, so that this act could be performed easily.

I used no dressing or packing, and I studied the patient to see whether in swallowing there is an actual dilatation of the esophagus or whether it is simply opened like a bag and the food pushed downward. Before the wound closed we were able to see that in swallowing, the esophagus did not dilate to receive the food. My patient does not wear a tracheotomy tube. He wore one for some time, but happened to forget it one day, and finding that he did not need it, has dispensed with its use.

Dr. MACKENZIE—In the debate on malignant disease of the larynx at the Baltimore meeting of the American Laryngological Association, in 1890, I stood alone among my fellow-laryngologists, as I stand alone today, in advocacy of radical operation and by radical operation I mean total extirpation of the larynx with its lymphatics and lymphatic glands, as the only rational method of dealing with this too often fatal malady. Extirpation of the larynx was then, as it is now, denounced as an unjustifiable and ghastly procedure, and we are told that the operation should be abandoned because in malignant disease it has resulted in failure and that life has been shortened thereby. Even if this doubtful assertion be true, better a shorter life of comparative comfort than a prolonged life of hopeless agony. We are, however, dealing not with the past of this operation, but with its future. To the modern surgeon they are sufficiently apparent, but I believe there is one thing that the records of the future will show, namely, the reason so many cases have terminated in failure and death is because the disease has not been radically dealt with. As long as we have lymphatics to carry infection and glands to become infected, so long will our patient be subjected to ultimate danger. The more I investigate the subject and the more I see of the treatment of cancer in general, the more convinced I become that there is only one rational method of dealing with cancer of the larynx. Early total extirpation of the organ with its tributary lymphatics and glands, whether the latter be apparently diseased or not, is the only possible safeguard against recurrence or metastasis. By no other method can we give the patient a reasonable assurance of a permanent lease on life. The surgeon who is abreast of the times does not trifle with cancer in other organs. Why should the larynx be made the exception to the rule? We will have to learn the same lesson here that we are slowly learning in the case of cancer in other parts of the body. No one at the present day thinks of taking out half a breast, half a uterus, or half a kidney for cancer, no matter how circumscribed the growth may be. It is impossible by inspection either with the laryngoscope or after preliminary division of the thyroid, by transillumination or by the sense of touch, to limit the extent of the disease before operation. As I have demonstrated, even after removal of the larynx the disease may be apparent in one side of the organ and not in the other, and yet the microscope show extensive cancerous deposit in the seemingly normal side. This condition is liable to occur in cases in which the epithelioma originates in the deep-seated glands and may not approach the surface until a late stage of the disease. It is also possible that in a more or less advanced stage of cancer of the larynx or even in its early history we may find young cells in the neighboring lymphatics, as Halsted has demonstrated in the case of cancer of the breast. In the presence, therefore, of the fact that it is impossible to limit the disease by inspection and the sense of touch and in the light of the revelations of the microscope it becomes a serious question whether we accomplish any lasting good by any operation short of complete excision of the larynx and the neighboring lymphatics and glands. Certainly if the disease approaches the middle line, the imperative necessity of complete removal must be apparent to the most timid and doubting operator. Confronted by this uncertainty, the position of the surgeon is a most responsible one. Operations of this class should only be undertaken by surgeons of acknowledged skill and experience and with a conscientious recognition of the ethical relations of operator and patient. Thyrotomy with partial removal of the larynx is not up to date surgery, and is a reversion to and ressurrection of a method of procedure that was discredited and abandoned half a century ago.

Beside the question of life-saving, all other considerations pale into insignificance. Given a cancer confined to the larynx (even though the entire interior of that organ be involved) in a person in fairly good condition, and offering no absolute contra-indication to operation, I would no more hesitate to recommend excision of the larynx and lymphatics than I would under similar circumstances hesitate to recommend excision of the breast. The conditions surrounding the two operations may be dissimilar and the danger greater in the one than in the other, but to the patient it is the choice between danger and death.

A great deal has been said in recent years about the dangers of thyrotomy and we are told that we must not operate if the lymphatic glands of the neck be involved. The so called dangers of thyrotomy are largely fanciful. If there be any chance of saving life, I believe a preliminary thyrotomy justifiable, even in the presence of external glandular enlargement, provided such involvement be not, on its face, too extensive. More than that, if, on thorough exposure of the parts—assuming that there be no serious contra-indication to operation—it be found that the disease can be thoroughly eradicated, even if such eradication should involve more or less deep dissection of the tissues of the neck, it is far better to give the patient that chance of life than to allow him to drift on to certain and possible death.

Dr. RICHARDSON—The extirpation of a larynx containing a growth which has been proved microscopically to be carcinomatous is as justifiable an operation as can be done in the range of surgery. The operation should be done early. It is impossible, from a laryngoscopic examination, to judge of the extent and character of the growth. We get such a foreshortened image that nothing can be ascertained except perhaps the fact of the malignancy of the growth. Operations short of total extirpation are worse than useless. Where tissue of a malignant nature still exists it is sure to lead to a fatal termination of the case. The radical operation is one which can be executed with considerable ease, and can be made almost a bloodless procedure unless some of the veins are severed; and is not attended with any marked degree of shock. The danger and difficulty lie in the post-operative stage, until the wound is healed. It is during this period that most of the cases succumb.

Dr. Cohen's plan of doing the preliminary tracheotomy ten or twelve days in advance is well advised. The tendency with many is to do the extirpation too soon after the tracheotomy. I fear that this was one of the causes of the fatal issue in my case, for I only waited a week, when two would have been better. However, I was forced to go on because of the weakened condition of my patient.

Dr. SWEENY—I would like to question Dr. Myles in reference to the influence on the nasal secretions.

Dr. MYLES—They seem to be in very good condition.

Dr. BRYAN—It seems to me that the patient swallows air and the voice is produced by a vibratory expulsion.

Dr. MAKUEN—Though this man can only whisper, I believe that this whisper is due to the action of the organs of articulation upon the natural column of air. It is clear to my mind that a whisper is not dependent upon the larynx or upon the vocal chords. There are no vibrating surfaces here as in Dr. Cohen's case.

Dr. GIBBONS—Four years ago I registered the voice of Dr. Cohen's patient on the phonographic cylinder, and a year and a half ago I registered it again and found great improvement. Such a test should be made every six months.

Dr. MYLES—These cases should be seen promptly by men competent to examine them, and should then be taken to a general surgeon for operation. I prefer a surgeon in most cases, because the operation does not occur frequently enough to keep the laryngologist's hand active, though I should not hesitate to do it myself if necessary.

REPORT OF TWO CASES OF SUPPURATING MASTOIDITIS.

Presented to the Section on Laryngology and Otology at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY J. H. BRYAN, M.D.

WASHINGTON, D. C.

In presenting the following cases of mastoid disease, it is with the object of demonstrating the evil results that are liable to follow acute suppurations of the middle ear, especially when treated with the indiscriminate application of poultices, and the injudicious use of the Politzer air bag. In spite of the advances that have been made within recent years in the treatment of these affections, and the serious results that are almost sure to follow when these cases are badly treated, we still find physicians using the poultice to cause an abscess of the mastoid region to break externally. It has been my misfortune to have had several of these badly managed cases to treat,

the histories of two of which are herewith subjoined. I think they are good object lessons and may be a warning to some physicians not to allow their cases to go to the verge of dissolution before operative interference.

Case 1.—Acute suppurating otitis media, suppurating mastoiditis, abscess extending into the deeper tissues of the neck. T. M., white, age 56, was admitted to the Garfield hospital, June 24, 1896, stating that about six weeks previously he was suddenly seized with a severe pain in the left ear. He was treated with hot oil applications and poultices and the abscess discharged through the external auditory canal, giving him only slight relief however. The hot applications were continued notwithstanding a large swelling had formed back of the ear, which was excruciatingly painful.

On admission the patient was very much emaciated and weak. His mental faculties were decidedly obtunded, consequently it was not possible to obtain a clear history of his condition, from him. Temperature 100 degrees; pulse 60. There was a profuse discharge of pus from the external auditory canal, and a large swelling back of the ear, over the mastoid, extending upward toward the temporal region and down into the neck. Slight pressure over the swelling was very painful and caused the pus to flow more freely from the external auditory canal.

The patient was freely stimulated with whisky and strychnia and the mastoid region shaved and prepared for operation, which was performed June 25, under ether anesthesia. His condition was not considered favorable for anesthesia, but after the use of stimulants he bore that and the operation well. An incision was made commencing just above the auricle and extending down upon the neck about two and a half inches. This was followed by a discharge of a large quantity of pus, which was found to have burrowed into the deeper tissues of the neck. The cortex of the lower portion of the mastoid was completely destroyed, while the upper portion still remained firm. This was removed with the chisel and rongeur, and the antrum opened; all carious bone was removed with a sharp spoon, and in doing so the lateral sinus was exposed in nearly its full extent. As it was soft to the touch and no evidence of any septic infection, it was not opened. The sloughing tissue in the neck was scraped away with a sharp spoon, and after thoroughly irrigating the wound it was packed with iodoform gauze, and closed with a bandage; 8 P. M. temperature 101 degrees, pulse 120. Owing to the extremely weak condition of the patient he was freely stimulated with whisky.

June 26, 8 A. M. temperature was 98.4 degrees, pulse 96; 8 P. M. temperature 100 degrees, pulse 96, and stronger. Otherwise doing well.

June 27, 8 A. M. temperature 98.4 degrees, pulse 84. The wound was dressed, owing to the dressings being quite moist. In the neck wound there was still considerable sloughing tissue, which was removed. A continuous flow of pus was still observed coming from the external auditory canal.

June 30, temperature and pulse normal. Condition of the mastoid and neck wound very much improved. Large pieces of sloughing tissue removed from the lower portion of the wound. Pus continues to discharge freely through the external auditory canal, although little is observed in the mastoid antrum. The solutions pass freely from the antrum through the external auditory canal. The wound was dressed every other day on account of the free discharge of pus.

July 15, while the general condition of the patient has improved very much as well as that of the wound, pus still continues to flow through the external auditory canal. The patient was placed under ether, and the roof and posterior wall of the auditory canal were found to be in a state of extensive caries. The auricle was freed from its bony attachments and thrown forward, and the carious superior and posterior walls of the auditory canal removed with a sharp spoon. The auricle was then brought back into position and after irrigating the wound it was packed with iodoform gauze, both through the canal and from without. There was a rise of temperature to 99.8 degrees after this operation, but it fell to normal in a few days.

The general condition of the patient continued to improve, with the exception of a marked cerebral irritation amounting at times to decided delirium. This lasted about a week or ten days and then ceased.

September 30, the patient was discharged from the hospital, cured, the wound having closed completely, and with a hearing distance of one inch for the watch.

Case 2.—Acute suppurating otitis media, suppurating mastoiditis with a commencing infiltration into the neck.

The patient, a young man 19 years of age, consulted me Jan. 11, 1897, giving the following history: December 14 he was seized with a severe pain in the left ear following a slight attack of influenza. In a few hours there was a profuse purulent discharge from the auditory canal which gave him temporary relief, the pain returning, however, with increased severity and extending over the temporal and mastoid regions. Poultices were applied and the air douche used. In a few days a swelling appeared back of the ear, which became intensely painful on pressure. This form of treatment was continued until I saw him January 11.

His condition then was serious, he being exceedingly weak and emaciated. His temperature was 99 degrees.

On examination, a profuse purulent discharge was observed flowing from the external auditory meatus, but owing to the swelling of the canal no view of the membrana tympani could be obtained. The auricle stood out prominently from the side of the head, and back of it ever the mastoid region there was a large swelling extending into the neck. The parts were red and very sensitive, pitting on pressure. The patient was sent to the Garfield hospital and prepared for operation, which was peformed on the following day. The incision was made commencing just above the auricle, continued over the mastoid and terminating about two inches below the apex in the neck. Pus in large quantities was found at the apex of the mastoid, burrowing into the deeper tissues of the neck, but none was found over the upper portion of the process, the tissues being swollen from edematous infiltrations. After elevating the periosteum the cortex of the process was observed to be firm, and no opening communicating with upper cells or antrum could be found, but a probe passed readily through the large cell found on the under surface of the mastoid apex. The antrum was opened and the cortex removed with a chisel, when the cells of the mastoid were found to be in a state of caries, and the pus instead of breaking through the cortex found its exit into the tissues of the neck through the under surface of the apex where there is a large cell with very thin walls usually found.

After all the diseased tissue was removed with a sharp spoon, the wound was irrigated with a solution of bichlorid of mercury (1 to 3000), packed with iodoform gauze and closed with a bandage.

January 13, the patient is free from pain and feels generally comfortable. At 8 A. M. temperature 99.2 degrees; 4 P. M. 100 degrees.

The wound was dressed on the fourth day and very little secretion observed. The temperature was now normal and remained so during the convalescence of the patient. The subsequent dressings were made every third day; the wound continuing to heal rapidly, he was able to leave the hospital, cured, March 1, with a hearing distance of five inches for the watch.

While such cases as the above are not unusual in the experience of most aural surgeons, still they are of value in demonstrating to what extreme conditions patients suffering from suppurative inflammations of the middle ear may arrive, especially when over treated with the ever popular poultice, and subjected to the injudicious use of the Politzer air bag, a most valuable instrument when properly employed, but one capable of doing great injury in the hands of the inexperienced, especially when employed in cases of children with hypertrophy of the post-nasal lymphoid tissue.

818, 17th St., N. W.

AN HISTORICAL SKETCH OF THE OPERATIONS UPON THE MASTOID PROCESS.

Presented to the Section on Laryngology and Otology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY LAURENCE TURNBULL, M.D., PH.D.

AURAL SURGEON JEFFERSON MEDICAL COLLEGE HOSPITAL.

PHILADELPHIA.

It is now 105 years since a Danish surgeon, Berger of Copenhagen, was suffering from non-suppurative inflammation of the tympanum attended with distressing tinnitus aurium and deafness. To relieve this

condition the operation of perforating the mastoid process was performed. The patient being old and the bones very hard, the injection used would not pass through the opening in the mastoid into the middle ear. Pain, fever, sleeplessness, vomiting and delirium closed the scene and he died eleven days after the operation. The postmortem revealed "suppurative meningitis." Where the bone had been opened it was found to be two lines in thickness, while the perforator had entered much deeper.

A regimental surgeon by the name of Jasser, in 1776, performed the same operation upon the mastoid of a soldier who had suffered for a long period from a chronic middle-ear suppuration, with occasional subacute attacks attended by great pain. The region over the mastoid was swollen and the patient was half insane with pain. Jasser made an incision over the mastoid about an inch long and found a drop of pus. Encouraged by this he cut down upon the whole length of the mastoid bone. He found the surface roughened. He passed a probe quite deeply into the mastoid cells and injected fluid into the opening; it came out of the external auditory meatus, and at the same time a large quantity of pus was discharged from the external meatus. The patient immediately exclaimed that the pain had left his ear. He fell asleep and rested uninterruptedly for ten hours. In three weeks the opening behind the ear had healed, the discharge from the auditory canal had ceased and the patient heard better than before. Stimulated by this, Jasser performed the same operation upon the other ear of the same person, from which there was no discharge, but in which the hearing was impaired. The hearing is said to have also been improved after the operation, but this is very doubtful. There was no caries of the bone.

The operation received its name from "Jasser." The indications were correct in the first case, but were wanting in the second.

This valuable surgical operation lay dormant for over fifty years by this mistake.

Von Troeltsch, in 1861, published a valuable paper in *Virchow's Archiv* upon this subject of perforation of the mastoid, resurrecting and describing the operation in a clear and satisfactory manner. He then reported a case in which he had, in 1858, perforated the mastoid process with a blunt probe. According to Troeltsch's own words, although the indications that opening of the mastoid to remove dead bone and concealed pus and thus secure drainage, were now considered imperative and clear, he opened the softened mastoid with fear and trembling. He says: "I went to work with uncommon care, even with dread." The case was a success.

I now quote my own case, the report of which follows as given by Dr. D. B. St. John Roosa of New York (extract from *Philadelphia Medical and Surgical Reporter*, Vol. vii, p. 463, February, 1862) and published by him in a history of the operation, to be found in his work on "Diseases of the Ear" (1891, p. 540).

"In February, 1862, Laurence Turnbull, M.D., published two cases in which he made an incision down to the bone, and a third in which two months after he had opened the external tissues, he perforated the surface of the bone with a sharp hollow probe and applied nitrate of silver freely. A month later he again broke down part of the bone and nineteen days later he removed a large piece which was found to be movable with a probe. This was an operation similar to that of Troeltsch, although the German surgeon waited only a few days before venturing to perforate the cells with a probe, while the American delayed for two months. In spite of its exclusion from some tables, Turnbull's cases belong to the same category with that of the reviver of the operation." It was operated upon but three years after Troeltsch's case, and only one year after it was published. This lad, now a man of 34, made a perfect recovery and is still well and living.

In confirmation of the above facts, Professor Gruber, in his text-book "Diseases of the Ear" (Translation by Drs. Edward Law and Coleman Jewell, London, 1893, p. 462) states that, "in more recent times the attention of aural surgeons was again turned to this operative measure by Von Troeltsch, who gave as indications for its performance: Otitis media with collection of pus in the mastoid cells, which, even with coexistent perforation of the drum membrane, can not otherwise be evacuated, and the symptoms are too urgent to justify waiting for spontaneous opening of the abscess." The operation has been performed on these grounds with more or less good results by Von Troeltsch,[1] Turnbull,[2] Pagenstecher,[3] Follin,[4] Schwartze,[5] Gruber,[6] Mayer,[7] Jacoby[8] and others. The operation first came into more extensive use, however, in consequence of Schwartze's[9] zealous advocacy.

In the table published by Schwartze and Eysell they give the writer credit for his operation in 1862.

The indications given by Schwartze for performing the mastoid process are:

1. Acute inflammation of the mastoid process with retention of pus within the mastoid cells, when a permanent remission of the symptoms have not been brought about by Wilde's incision. The operation ought to be performed without waiting for symptoms of cerebral irritation or pyemia.

2. Recurrent swelling of the mastoid region, which has undergone temporary recession; or has led to abscess formation with or without fistulous openings in the integuments, even though no threatening symptoms exist at the time.

3. When after discharge of an abscess in the mastoid region, examination with the probe reveals a fistulous passage in the bone. Besides these generally recognized indications, the author considers the operation called for—

4. If with inflammatory processes in the ear, severe pains which resist all other treatment be present in the corresponding side of the head, even though no inflammatory appearance can be detected over the mastoid region.

In certain cases of tedious otorrhea the obstinacy of which is not sufficiently accounted for by the condition of the Eustachian tube and tympanum, and which resist long-continued and approved treatment on the ordinary lines, the discharge being offensive and mixed with cholesteatomatous masses or bony particles, even where no conspicuous changes can be discovered in the mastoid region, the author has recourse to operation; experience having taught him

[1] Virchow's Archiv, Bd., xxi, 1861.
[2] Med. and Surg. Reporter, Phila., 1862.
[3] Archiv für Klinische Chirurgie, 1862, Bd. iv, S. 523 et seq.
[4] Gazette des Hôpitaux, 1864.
[5] Practische Beitraege zur Ohrenheilkunde, 1864.
[6] Record of aural patients treated at the Vienna Hospital during the year 1865.
[7] Archiv für Ohrenheilkunde, 1. Bd.
[8] Ib., 111. Bd.
[9] Ib., xiv. Bd. S. 202.

that after removal of the cholesteatomatous masses or granulations which are frequently present in the antrum or mastoid cells, the otorrhea ceases and recovery takes place.

Sometimes, moreover, small circumscribed areas of inflammation exist in the mastoid process, which maintain the otorrhea and are inaccessible to ordinary modes of treatment. These are exposed by the operation and recovery is thus brought about more readily.

In connection with the two last-named indications, the operation acquires an exploratory significance, and under the modern favorable auspices of antiseptic surgical treatment, it may the more readily be undertaken on account of the danger which is always associated with a continuance of the disease.

255 South Seventeenth Street.

DISCUSSION ON THE PAPERS OF DRS. BRYAN AND TURNBULL.

Dr. C. H. BURNETT—I would like to ask Dr. Bryan whether anything had been used beside poultices and the Politzer bag?

Dr. BRYAN—In the first case the man was in a very low condition and could not give much information, but I understood that there had been only poulticing up to the time I saw him. In the other case there had been instillations of peroxid of hydrogen.

Dr. BURNETT—In the histories of all the cases reported as acute otitis media followed by acute mastoiditis I can read between the lines that the mastoiditis is a secondary infection, and in some cases I can see that the ear was over treated and secondary infection followed. I believe that in most instances the secondary inflammation was caused by the use of peroxid of hydrogen. Acute mastoiditis following otitis media has become much more frequent since the introduction of peroxid. You can imagine that erroneous ideas of treatment some people have, by one instance. I once found that a patient of mine, a physician, from whom I had removed the ossicles, had been for a year in the habit of cleansing his ears with his own saliva. I am sorry to say that nearly all the articles on this subject state nothing as to the treatment before the patient was seen by the aurist. I believe that cases of acute mastoiditis, complicating acute otitis media, are artificial results of improper irritative treatment and not the necessary result of the primary disease. They are instances of secondary infection due to the introduction and retention of morbific germs, by the irritative treatment of the primary inflammation and I know of no agent so efficient in forcing pyogenic germs into the inflamed ear as the expansive, energetic hydrogen binoxid.

Dr. J. A. STUCKY—I have seen many cases of acute mastoiditis caused by the use of peroxid of hydrogen in middle ear troubles, especially in acute otitis media. I consider it a dangerous remedy, and it is not right to use it in these chronic cases, unless there is a large opening.

Dr. MYLES—A coagulum of the mucoid substance and the peroxid is formed and is left in the recesses, from which it can not be washed out.

Dr. A. B. RANDALL—My experience has been in absolute conflict with much that has been stated. I must speak a word in defence of the Politzer bag, the syringe and peroxid of hydrogen. They are in constant use in my practice. While I have been reproached with the fact that I have a considerable group of mastoid cases to operate on, I will ask anyone to point out a case of mastoiditis as a primary cause. These cases are almost all taken from the practice of other men. I have never seen any evil results from my vicious habits. The proper employment of the Politzer inflation in the early stages of otitis media is of great value; its abuse has no place whatever. The use of peroxid of hydrogen is limited ordinarily to the acute cases. The perforation is commonly small, especially in children. When the hot douche has not given good results I have taken care that my peroxid should go into the very places where it is said to do so much harm. We have bad results when the peroxid does not penetrate. With the use of the intra-tympanic syringe, carrying the peroxid into the cavity so that it bubbles out at the nose, I have seen these cases go on to rapid recovery. While I do not advocate this as a routine treatment, I have no fear as to the peroxid, and believe that it should be more widely used, especially in Europe where it is hardly known. Cases of the type mentioned by Dr. Bryan sometimes occur with peculiar frequency in the experience of some men. They are by no means as rare as is sometimes supposed. I have had perhaps twenty or twenty-five of them, and my assistant, Dr. Hammond, has had eight or ten. The cases to which we have reference today are acute.

Dr. CLINE—I had a case in which I removed a large polyp from the external auditory canal. Later, when the patient was returning to a neighboring town, he had a chill on the road. He came under the care of a very good aurist, who for a week worked hard to save his life. There was inflammation of the mastoid cells. The doctor, I understood, had washed out the cavity with peroxid and had put something into the ear to stop the discharge suddenly. I believe that we should discriminate in our cases. If we have a large perforation we can use peroxid with more safety than with a small opening, but it must be used carefully.

THE CHAIRMAN—I would ask Dr. Burnett if he objects to the use of peroxid in chronic cases to the same degree.

Dr. BURNETT—I do not use peroxid at all, either in acute or chronic suppuration of the ear on account of its expansive force and the consequent risk of forcing pus into the middle ear cavities. It is perhaps less harmful in chronic than acute cases. We must regard the antrum as part of the middle ear, not the mastoid. Many acute cases will get well without mastoid disease. A natural siphonic action takes place between it and the antrum. When I was a medical student we never heard of mastoid disease occurring as a sequel of otitis media. Why should one man now see 100, 200 or 300 cases in a comparatively short time if it is a necessary result of ear disease? The so-called acute mastoid disease as a sequel is largely an artificial result.

H. D. HATCH, D.D.S.—I once had a lesson as to the explosive force of peroxid of hydrogen. In working on a tooth my instrument slipped up under the tissues, almost to the eye. The wound healed and was apparently all right, but later an abscess formed, well up toward the eye. There was no swelling around the eye, except this small point, and there was no wound in the mouth. I slipped a bistoury into the abscess and injected peroxid of hydrogen. Inside of twelve hours after my injection, which caused intense pain, the face was swollen and the eye black. I have ceased to inject peroxid into any cavity into which there is a small opening, except in some cases where I inject a little at a time and tease out the pus. I have had other cases where the mechanical force of the explosion gave great pain. Members of the dental profession use peroxid of hydrogen largely. I came to to the conclusion last winter that it was unwise to inject it into a bone cavity.

Dr. BRYAN—I have seen serious results from the use of the Politzer bag and from the use of peroxid of hydrygen, but they were at the hands of operators who did not know how to use them. My object was not so much to advise the members of this ASSOCIATION against the use of these things as to urge their cautious use. I have thought it best to present these cases so that they might be an object lesson to those who are not so careful.

PHENOMENA OBSERVED IN TWELVE CASES AT VARIOUS STAGES OF THE OPERATION FOR SECTION OF THE INCUDO-STAPEDIAL ARTICULATION AND MOBILIZATION OF THE STAPES.

Read in the Section on Laryngology and Otology, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1–4, 1897.

BY E. B. GLEASON, M.D.

Clinical Professor of Otology in the Medico-Chirurgical College; Surgeon-in-Charge of the Nose, Throat and Ear Department of the Northern Dispensary, Philadelphia.

PHILADELPHIA, PA.

The ear in which the patient's hearing was the more defective was invariably selected for operation. The night before the operation the auditory canal was thoroughly cleansed, syringed gently with a solution of bichlorid, 1 to 1000, and occluded with a piece of iodoform gauze, which was allowed to remain in position over night. The drumhead was soaked for one hour before the operation in a sterilized 4 per cent.

solution of cocain, by means of a pledget of sterilized absorbent cotton, which was saturated in the solution and inserted into the canal in contact with the drumhead. After the primary incision through the membrana, the edges of the wound and the intratympanic membrane was touched from time to time with a sterilized 10 per cent. solution of cocain. All maneuvers subsequent to the primary incision were thus rendered practically painless.

The steps of the operation performed for the relief of tinnitus and improvement of the hearing, in twelve cases of advanced sclerotic catarrh of the middle ear that had not improved as the result of non-operative measures, were as follows: An incision through the clear part of the membrana, as close to the periphery as possible, was made from a point below the level of the malleus tip to the short process, and the flap thus produced was turned forward over the malleus handle. An attempt was made to mobilize the chain of ossicles by traction in various directions upon the lower portion of the long process of the incus. In the last six of the twelve cases operated upon, the tendon of the stapedius muscle was then severed and the attempt renewed to mobilize the chain of ossicles by traction upon the long process of the incus. The incudo-stapedial articulation was next severed and the stapes mobilized if possible by lateral pressure and lever-like movements of a cotton-tipped probe in contact with the head of the stapes. In the last of the series of cases, sufficient force was exerted to fracture the crura of the stapes; but in this case not the slightest improvement of the acuteness of hearing followed the operation. There were however no disagreeable after-effects.

In all but one case the operation was comparatively bloodless. In this instance, however, such a persistent hemorrhage followed the primary incision through the drumhead that the operation was abandoned. Two weeks afterward an opening was made through the membrana over the incudo-stapedial articulation, by means of a cotton-tipped probe dipped in fuming sulphuric acid, the articulation severed, and the stapes mobilized. The slight improvement of the hearing that resulted from this procedure was lost during the course of an otorrhea that persisted for three or four weeks after the operation, but the patient was cured of an annoying tinnitus. Suppuration did not occur in any of the other cases.

Each of the twelve cases operated upon in the manner described above had their hearing carefully tested both with voice and watch at each step of the operation.

In no instance did the slightest improvement of the hearing follow the incision of the drumhead and the turning forward of the flap. Although the evidence of twelve cases is by no means conclusive, yet the writer can not help suspecting that the idea that improvement of hearing in catarrhal cases with patulous Eustachian tubes would follow the mere excision of a portion of the drumhead is a myth, and that the improvement of hearing that was reported to have followed this procedure was due in all probability to incidental mobilization of the chain of ossicles. This suspicion becomes more plausible when it is called to mind that Sir Astley Cooper did his operations with an ordinary trocar, and that up to the time of Wilde, the favorite instrument for performing the operation was that of Fabrizzi, consisting of a small trephine with a cork screw stilet, by means of which not only a section of the membrana, but also a portion of the malleus handle was usually removed. So inadequate was this instrument for the safe perforation of the drumhead that two deaths following the operation were reported, in London, by Dr. Butcher in 1846, and in these two cases, at least, it is probable that something more was accomplished by the operation than the mere removal of a disc of the drumhead and a most thorough mobilization of the ossicular chain.

It also seems probable that in many instances the improvement of hearing and relief of tinnitus reported as following the modern operation for the removal of the drumhead, malleus and incus, were the result of the incidental mobilization of the stapes. The only advantage in catarrhal cases of such a procedure over the operation described above, consists in the accessibility of the stapes for purposes of mobilization, which is probably more than counterbalanced by the constant exposure of the intra-tympanic mucous membrane to the danger of infection by pyogenic bacteria.

It was found impossible to improve hearing in any of the twelve cases by manipulation of the long process of the incus in the hope of mobilizing the incus.

Section of the stapedius muscle was accomplished, in two instances, with an audible snap and an immediate improvement of the hearing In both cases, however, further improvement followed the subsequent incision of the incudo-stapedial articulation and mobilization of the stapes.

The amount of force used where no improvement of hearing resulted from the operation, was in all instances sufficient to endanger fracturing the crura of the stapes, which actually occurred in the last case operated upon. In this and others where no improvement of the hearing followed manipulation of the stapes, it is probable that ankylosis of the foot plate of the stapes to the oval window existed to such a degree as to render it absolutely impossible to break up the adhesions without fracturing the crura in the attempt. Politzer has proven by his experiments upon the cadaver that when bony ankylosis exists between the foot plate of the stapes and the oval window the crura are invariably broken in an endeavor to remove the stapes by traction.

The duration of the vertigo which invariably ensues in the cases where improved hearing followed manipulation of the stapes, varied in duration from a few moments to three days. One case was obliged to lie down three times during the manipulation of the stapes because of dizziness and faintness, which, however, lasted only a few moments. In another instance the patient staggered almost like a drunken man as he was led away from my office at the conclusion of the operation. His dizziness lasted only twenty-four hours.

In no instance did any permanent injury to the auditory apparatus follow the operation. In all cases where tinnitus existed, it disappeared after the operation. There was, however, only in five a noticeable and practical improvement of the hearing. In one, improved hearing for the voice did not entirely disappear until three years after the operation. In all cases improved hearing for the watch invariably disappeared within a few months, probably as the result of the reformation of adhesions. In one or two hearing notably improved both for watch and spoken words for a few weeks subsequent to the operation. It seems more than possible that the hearing might have been again improved in some at least of the

cases by incising the drumhead and remobilizing the stapes.

41 South 19th St.

DISCUSSION.

Dr. BURNETT—I have seen several cases of perfectly mobile stapes with total deafness, and total ankylosis of the stapes with very good hearing. I think that so far the operation can claim to relieve chiefly in cases of aural vertigo. These cases can often be treated successfully by intra-tympanic operation, either by Dr. Gleason's method or, as I prefer, by the removal of the incus alone.

Dr. RANDALL—We may properly hope for this operation a place equal in importance to that held by the operation for cataract in the surgery of the eye. There, in a large number of cases, lies the impediment to the betterment of the organ of hearing. More attention should be paid to the proper testing of hearing in these cases. Disappointments will greet us for a long time, as they have done in the past, as in the case of the operation for the removal of the drumhead, which a few years ago was exploited as the new treatment for all ear diseases. Even with great care and proper selection of cases, results will often be very disappointing.

Dr. TURNBULL—I feel as if I had been an advocate of the removal of the malleus. One of my cases was operated on seven years ago and her hearing is still good. She was very deaf indeed. The benefit may have come from the mobilization which attended this operation. In another case I operated on a lady who had suffered greatly with vertigo. The vertigo was entirely relieved and she has fairly good hearing.

Dr. BERNSTEIN—I have removed the incus in three cases, but I shall never do the operation again. In one case, for about three weeks after operation the patient's hearing was decidedly improved, but after that she had to use a trumpet. This has been my experience in the other cases also.

Dr. MYLES—I have rather opposed the removal of the ossicles. When cures from this operation are reported, it is not always stated how long the hearing remains improved. I know one man whom a distinguished aurist persuaded to have his ossicles removed, and for awhile his hearing was improved; but now he can hear nothing. Two young men came to me two years ago, whose hearing had been much impaired for about two months. I found large exostoses and complete nasal stenosis, and one of them had considerable adenoid tissue and subacute otitis media. I advised rest. One of the young men told me that he had come from the office of a distinguished aurist who had been almost violent in his efforts to induce him to have the ossicles removed. I advised them both to wait and try the rest treatment first, which they did. They both hear well today. If the ossicles had been removed, they would have heard better for a time, and would probably have been reported as remarkable cures.

Dr. GLEASON—Until a couple of weeks ago, I supposed the result I obtained in a case operated on two years ago was permanet, but the patient told me that all the improvement had disappeared. I would advocate this operation only after everything else has been tried.

OBSERVATIONS ON SOME PATHOLOGIC CONDITIONS OF THE NASO-PHARYNX.

Presented to the Section on Laryngology and Otology at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY EMMA E. MUSSON, M.D.

PHILADELPHIA, PA.

Believing that the presentation of cases having either special pathologic features or dependent on unusual causes, or amenable only to special lines of treatment, would be of interest. I have selected from my case book several groups of cases which have come under my observation during the past two years.

The first group comprises a number of cases of hypertrophied lymphoid tissue in the vault of the pharynx, all of which required for their relief operative interference. The points of interest in these cases, relate to the age and the character of the symptoms. Out of the last 230 patients in my case book, 34 had hypertrophy of the third or Luschka's tonsil. Of this number eleven were from 15 to 20 years of age; eleven from 20 to 25; eleven from 25 to 35, and one 40 years of age. The age of the majority of these patients attracted my attention on account of the prevalent belief that these lymphoid vegetations are peculiar to children and disappear at the period of puberty.

Of these thirty-four cases, nine were complicated with profuse post-nasal discharges. In five instances the growth interfered with singing upper notes; in one, with elocutionary work and in one with ordinary school teaching.

Two cases were complicated with hay fever; two with mouth breathing; two were subjects to attacks of acute pharyngitis and tonsillitis, and two were subject to frequent colds.

Twelve cases were complicated with disturbance of the ear. Of these, three had marked deafness; three were moderately deaf; one had purulent otitis media; two acute Eustachian catarrh and three tinnitus and fulness.

The majority of these cases had post-nasal catarrh. catarrh. The hypertrophied lymphoid tissue in at least 95 per cent. of the cases was entirely confined to the vault of the naso-pharynx. The growth varied in appearance and extent, from apparently smooth masses, one quarter of an inch in thickness to vegetations as large as those found in well marked cases in children. A number of these vegetations were connected with the Eustachian tube by synechiæ. Moreover in those cases complicated by diseases of the middle ear, the vegetations were fibrous in character while in those complicated by a profuse muco-purulent secretion, they were soft and friable.

Surgical procedures for complete removal of the growths, were followed by relief if not complete disappearance of all the symptoms except the deafness. There was a disappearance of the post-nasal discharges and of the seeming purulent rhinitis, and the patient was no longer subject to repeated colds and sore throat. The voice became more resonant in speaking and two or three notes were added to the upper register of the voice in singing.

Surgical interference which gives such brilliant results in early childhood, for the relief and cure of deafness, was in my cases followed only by slight if any benefit; not until after a long course of patient treatment of the middle ear disease was any improvement noticed. In those cases however in which the middle ear was but slightly involved and the symptoms present only at intervals a prompt cure was effected upon removal of the growths. Of the cases complicated with naso-pharyngeal secretions, four were of exceeding interest. In two of them the discharge from the nose and naso-pharynx was purulent, profuse and constant. In the two other cases the secretion was excessively profuse, but entirely mucoid in character. Three had a family history of gout and rheumatism, and had not yielded to prolonged treatment for nasal catarrh. In two the amount of lymphoid tissue was so small that I hesitated long before removing it; there was an entire absence of the gross appearance of adenoid growths, the vault of the pharynx showing only a thin sheet of lymphoid tissue. After the lapse of a year, during which there was no recurrence of the discharges, I felt that I had been justified in my operative procedures.

The methods resorted to for the removal of these growths were the forceps followed by curetting in the

larger number of the cases. In two only I employed the galvano-cautery.

In reviewing the literature on this subject I found an article by Dr. Farlow, in which attention is called to the mistake frequently made, that adenoid growths in the post-nasal space are peculiar to childhood and that they disappear at the time of puberty. He also emphasizes the fact that the deafness occurring in adults as a result of adenoid vegetations is but slightly benefited by their removal. Bryson Delavan is quoted in the *Annales des Maladies de l'Oreille* as saying that adenoid growths persist after puberty. Moure makes a similar statement. Chiari, in the *Annales* for 1894, states that out of 233 private cases and 152 clinical, 16 cases between ages of 20 and 30 had lymphoid hypertrophy of the third tonsil.

W. H. Bates of New York, published a history of five cases of deafness in adults due to adenoid vegetations of which the youngest was 24 and the eldest 55 years of age.

This group of cases suggests several queries, to which I have been unable to furnish any definite answers: 1, as to the causes of absorption or non-absorption of adenoid vegetations; 2, what factors determine a variable group of symptoms in cases apparently similar; *e.g.*, why should the middle ear be involved in only a certain percentage of cases?

The second group comprises a number of cases of chronic naso-pharyngitis associated with, if not dependent on, the uric acid diathesis, employing this term in its broadest sense as a disturbance in the equilibrium which should exist between the production and elimination of uric acid.

The feature of this group, to which I ask attention, is a probability of the uric acid diathesis being the underlying and causative agent. It was pointed out by Beverly Robinson, in 1888, that there was apparently a correlation between post-nasal catarrh, gastro-intestinal disorders and lithemia and somewhat later Harrison Allen described the gouty sore throat. At the present time most authorities are united in the opinion that the majority of cases of chronic naso-pharyngitis are either due to some disturbance of the digestive tract or are local manifestations of some constitutional diathesis as lithemia, gout and so forth.

While the obverse of this was demonstrated by Turck of Chicago, who found in the stomach bacteria of the same variety as those in the mucus of the naso-pharynx, these bacteria can set up acid fermentation in the stomach. Believing that many cases of naso-pharyngitis are but local expressions of the uric acid dyscrasia, it has long been my practice, to look beyond the local nasal condition and so treat the patients constitutionally with anti-lithemic remedies. With a view of determining whether there was a defective elimination of uric acid, I had the urine of seventeen patients suffering from nasal and post-nasal disease carefully analyzed, using Haycraft's method for the uric acid test and the hypobromid process with Marshall's apparatus for that of the urea.

The majority showed a marked change in the normal ratio between the uric acid and urea excreted; the disproportion ranging from one of uric acid to seventy-four of urea, to one uric acid to eight of urea. Five cases had two or three analyses made, always showing a disproportion between the amount of uric acid the urea excreted; in Luff's table of fifty daily eliminations of uric acid and urea of a healthy adult man on a mixed diet, the highest percentage of elimination of uric acid was one to twenty-eight, the lowest one to fifty-five.

It was only in exceptional cases that I found any marked gastric disturbances. These analyses seemed to establish the fact that the presence of uric acid salts was the exciting cause of the naso-pharyngeal symptoms.

Most authorities, however much they may differ as to the formation or elimination of uric acid or the proportion which it should bear to the urea, admit that under certain conditions an undue amount is found in the blood; according to Levison and Luff in the form of a quadriurate, and in consequence is apt to be deposited at the point of least resistance. Luff in his Gulstonian Lectures states that uric acid deposits have been found in the mucous follicles of the pharynx. In the words of W. F. Dudley, the uric acid dyscrasia, like other dyscrasias, has localized areas of special selection for its clinical manifestations.

One such area appears to be the vault of the naso-pharynx. This region is rich in lymphoid and glandular tissue and susceptible to uric acid deposition and consequent irritation, with a change in the character of the secretion. This latter change may be the possible cause of the subsequent congestion and hypertrophy of the mucous membrane which, at first, is attended with a profuse secretion of mucous, and later by a blocking up of the gland ducts and an atrophy of the glandular tissue, to be followed by a diminution of water in the secretion, the formation of clots of mucus and adherent crusts.

It is at this stage also that the marked symptoms in cases of chronic middle ear catarrh begin to appear; previous to this time there has been but slight buzzing in the ears with a sensation of fulness lasting a short period of time. These attacks, however, become more frequent until the patient is conscious that hearing is gradually being lost.

The line of treatment was toward the correction of gastro-intestinal irritation or constitutional diathesis, in connection with that of the local condition of the naso-pharynx. It was only in the milder cases or those in the earlier stage of the affection that relief followed non-surgical methods of treatment. In all other cases the hypertrophied and granular mucous membrane of the vault and post-pharyngeal walls was curetted, with excellent results. In those cases where the disease had localized areas, probably due to the blocking up of the gland ducts, the galvano-cautery was used, followed by improvement only. Stazza argues that surgical measures only are applicable.

The third group comprises a number of cases in which acute follicular naso-pharyngitis was a concomitant of acute lacunar tonsillitis. The association of these two states attracted my attention several years ago. Since then it has been my rule to examine the naso-pharynx in all cases of acute tonsillitis, to determine the frequency and extent of the follicular inflammation.

In 50 per cent. there was a congestion and swelling of Luschka's tonsil with distinct points of follicular exudate. In about 40 per cent. of the remaining cases there was a congestion but no exudate.

Bosworth, in his book, refers to this possibility of an acute follicular inflammation of the third tonsil. This involvement of the naso-pharynx in acute follicular tonsillitis affords a ready explanation for the number of cases of acute inflammation of the middle ear which complicate these attacks.

The general practitioner would seldom err if he included the treatment of the naso-pharynx in all cases of acute infectious diseases of the pharynx and tonsils. A further argument in favor of the theory of the participation of the naso-pharynx in acute pharyngeal infections is that frequent cases of chronic post-nasal catarrh follow in the track of these attacks.

Moure, in the *Twentieth Century*, gives a detailed description of acute inflammation of Luschka's tonsil under the name of acute adenoiditis and, judging from the symptoms detailed, probably many so-called "colds in the head" would prove, on post-rhinoscopic examination, to be attacks of acute naso-pharyngitis or adenoiditis. And here I digress for a moment to call attention to two different phases a so-called cold in the head may assume, as the result of a constitutional dyscrasia: in one we have the preliminary stage of dryness and irritation followed by a profuse watery secretion, later becoming muco-purulent; but if the patient be a lithemic subject the stage of serous effusion is followed by a profuse mucoid secretion, tenacious in character, blocking up nose and naso-pharynx but never becoming purulent; resolution is prolonged beyond that of the ordinary cold.

Two cases of this description occurred in children of 14 and 16 years of age; one with marked family history of uric acid on both sides, on whom ordinary treatment for "cold in the head" had no effect, was put on a strict dietary and given potassium bicarbonate; speedy relief followed this treatment, along with marked improvement in the general health and freedom from colds.

I will close this paper with a description of three cases of direct infection of the naso-pharynx. The first, a student in the bacteriologic laboratory, accidentally broke a test tube containing a culture of streptococci, and although strict antiseptic precautions were immediately taken, within twenty-four hours there was an active purulent inflammation of the tissues of the naso-pharynx, and in forty-eight hours, when I first saw her, the mucous membrane of the naso-pharynx was so swollen as to almost entirely cut off the view of that region. The discharge into the pharynx was profuse, purulent and foul, the temperature 102 F., though probably higher during the first twenty-four hours. Culture tube tests of the discharge showed a colony of diffused streptococci. A long time elapsed after the disappearance of the purulent secretion and high temperature before reduction of the swollen mucous membrane took place.

The second case was a patient who, just recovering from an attack of acute rhinitis, superintended the opening of numerous cases of ostrich feathers in the raw state, packed in camphor; she was suddenly seized with a sense of suffocation and fainted. Two hours afterward I found the throat intensely congested; in twelve hours an acute naso-pharyngitis developed, with profuse purulent discharge and a temperature of 100 degrees F.; two days later the temperature was normal and the throat almost well. The patient was sent to Atlantic City; twenty-four hours thereafter there was a sudden rise of temperature and involvement of both frontal sinuses and the left antrum in an acute purulent inflammation. No cultures were taken. Is it possible that these two cases were like Stazza's, that of acute inflammation of Luschka's tonsil during an epidemic of influenza, or were they due to bacterial infection?

The last case is that of a physician who has been treated several times this winter for attacks of acute adenoiditis (Moure) which came on after exposure to cases of diphtheria or acute sore throat; the lymphoid tissue, between the attacks, now remains chronically hypertrophied. The patient is about 30 years of age and still retains in the vault of the naso-pharynx a small amount of hypertrophied lymphoid tissue that was not thoroughly removed in an operation performed six years ago.

258 South 16th Street.

DISCUSSION.

Dr. RICHARDSON—Acute inflammation of the naso-pharynx antedating and occurring with acute inflammation of the tonsils is, I think, a much more common occurrence than we are apt to believe. I have seen a number of such instances and a number of cases in which the inflammatory changes have been limited to the naso-pharynx and the acute inflammation of the tonsil has not appeared at all. I saw one case where the whole vault of the pharynx had almost the appearance of an acute diphtheritic change, and there was no inflammation of the tonsil. I think it would be wise in all cases to examine the naso-pharynx carefully. I have for a long time observed that the uric acid diathesis has much more influence on naso pharyngitis.

Dr. D. BRADEN KYLE—Luschka's tonsil is really a normal physiologic condition. In many cases inflammation is secondary and not the cause of the enlarged gland structure.

Dr. G. V. WOOLEN—I am not a bacteriologist, but I know that bacteria must be a cause of many of the troubles that we see. A chief function of the nose is to purify the air, and the impurities of the air which are largely bacterial in origin must influence the nasal conditions. Most people escape these troubles, and why? The conditions must be favorable for their development. When these are present the fact is expressed in acute attacks. Such conditions may be brought about by indiscretions of diet, or by the thousand other things that interfere with health. The pendulum has swung to the operative extreme. We must go back to the cleansing processes. Patients, themselves, can do much in this way, by thorough cleansing before meals, especially where there is uric acid trouble. We can not give too much attention to cleanliness, which is very closely akin to antisepsis. With a simple alkaline wash I have done much to prevent trouble.

Dr. CURTIS—In my opinion the uric acid diathesis is far from being a complication of the disease. We should consider that it is due to the waste product of an overworked brain, very possibly due to an enfeebled condition of the body.

Dr. WILSON—Did I understand the last speaker to say that he considered these conditions due to an overworked brain?

Dr. CURTIS—I meant the uric acid diathesis—not the adenoid growths.

Dr. WILSON—We see uric acid conditions in patients in whom the brain does very little work. I think it is reasonable to believe that there is something in the system which manifests itself in many ways, and which admits of bacteria taking effect on the membranes.

Dr. JAQUES—Physical resistance is the important point to be remembered in treating these cases. The uric acid diathesis may be the means of bringing down the general resistance. If so, it is one of the exciting causes. It takes a number of factors to produce these conditions. The mouth is a perfect breeding place for germs all the time, but only when the physical resistance is reduced do we have the proper conditions for disease. Bring up the vital resistance of your patients to the highest point, then treat the pathologic conditions.

The CHAIRMAN—A constitutional condition which disposes certain individuals to lymphoid enlargements, especially hypertrophy of the faucial and post nasal tonsils, has long been recognized. We are accustomed to call it lymphatism for want of a better term. That this is or may be synonymous with uric acid diathesis seems to me a new idea. I would ask whether the author found uric acid present in cases of chronic enlargement of the lymphoid tissues, or whether it was only in acute inflammation of those already hypertrophied. There is a constitutional tendency to recurrence of these growths after removal. Operators have endeavored to do thorough work; but even then several years after, in certain cases, there has been a recurrenee of the hypertrophy. This is especially apt to take place, however, if a thorough operation is not done. Concerning the effect on the hearing, I have had cases of practical recovery from long continued deafness after operating for adenoids, but there are other instances in which but little improvement takes place. We are apt to look for improvement

too early. Cases which have disappointed me at the end of a week or a month, perhaps, show marked improvement at the end of three months.

Dr. MUSSON—I did not intend to convey the idea that in my first group of cases the trouble was due to uric acid. In the second group I spoke of the uric acid diathesis, sometimes with a certain amount of lymphoid tissue. Where uric acid was present I did not commence curetting at once but tried constitutional treatment first. I feel sure that some of my patients who had uric acid trouble did not overwork their brains. All antiseptic precautions were taken in these cases. In adults I believe that curettement could be carried out without injury to the Eustachian tube or the surrounding tissues.

QUESTIONS REGARDING THE ETIOLOGY OF ADENOID VEGETATIONS AS FOUND IN THE NASO-PHARYNGEAL CAVITIES.

Presented to the Section on Laryngology and Otology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY M. C. O'TOOLE, M.D.

SAN FRANCISCO, CAL.

That we possess no positive knowledge regarding the etiology of adenoid vegetations, as found in the naso-pharynx, can be ascertained by a brief study of the opinions expressed by writers on this subject. Scrofula, heredity, the acute exanthems, cold and dampness of climate and whooping cough, have all been mentioned as etiologic factors, while Gruber asserts that neither climate nor occupation appear to influence their development.

In a paper, "Suggestions Regarding Treatment of Diseases of the Ears and Throat in Children," read before the Medical Society of the State of California, April 1894, the following statements appear: "For the past three years, I have lost no opportunity of investigating the etiology of adenoid vegetations, and the results have been in every way confirmatory of former experiences. Five years ago, I removed adenoid vegetations from the pharyngeal vaults of three children, all of the same family; two girls and a boy, aged at the time of operation 3, 5 and 6½ years respectively. The mother incidentally mentioned to me, when speaking of her trouble, that she had suffered considerably with leucorrheal discharges at the time of their birth. She was then six months pregnant. A confrère remedied the abnormal uterine and vaginal secretions. The infant was borne in due time. It is now 3 years old, but has no abnormalities in the pharyngeal vault.

Since this experience, I have invariably questioned mothers, having children with these growths, and have in every instance found that they had been effected with abnormal uterine or vaginal secretions at the time of the birth of the child so affected. From these observations I have formed the opinion that acute suppurative inflammation of the middle ear in infants is, in most cases, the result of contact with gonococci bearing, maternal vaginal secretions during parturition and that catarrhal secretions under like conditions, are responsible for the existence of abnormal lymphatic follicles and adenoid vegetations as found in the pharyngeal vaults of older children.

The writer, being aware that his experience on this subject is as yet too limited to admit of positive conclusions, would nevertheless venture the opinion that obstruction of the nasal passages during infancy and early childhood by the causes and in the manner indicated is the chief etiologic factor in the development of post-nasal growths whether as adenoid vegetations or hypertrophied lymphoid follicles, also that subsequent asymmetrical development of the nasal structures and of the nasal cavities are frequently traceable to the same cause.

6 Eddy Street.

A CASE OF MYXEDEMA WITH PROMINENT NASAL SYMPTOMS.

Presented in the Section on Laryngology and Otology, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY A. H. CLEVELAND, M.D.

CLINICAL PROFESSOR OF LARYNGOLOGY MEDICO-CHIRURGICAL COLLEGE; SURGEON TO EAR, NOSE AND THROAT DISPENSARY, PRESBYTERIAN HOSPITAL.

PHILADELPHIA, PA.

The fact that the nasal condition was the only reason why this patient sought relief and that this seems to be so entirely dependent upon the general disorder leads me to report the history, which is as follows:

Mrs. I., age 38, was first seen Sept. 9, 1896. She complained of nasal stoppage with attacks of sneezing and watery discharge following an attack of grippe in May and persisting since then. For the past three weeks it had been worse. Examination of the nostrils at this time showed large boggy turbinates on both sides, rather worse on right, with a waxy paleness of the entire mucous membrane of the nostrils. Several constitutional remedies, as well as local applications, were tried in succession without the slightest effect on the condition. Oct. 26, 1896, frost having eliminated a possible hay fever and the hoped-for improvement not having occurred, I examined the nostrils again very carefully and was impressed by the waxiness of the membranes as contrasted with the condition found in ordinary rhinorrhea. It suggested to my mind a general rather than a purely local disease, and close questioning elicited the following more or less confirmatory history.

Family history: On the mother's side two aunts had attacks of asthma. A cousin of the father also had such attacks. No history of tuberculosis or of nervous disease, except rather far back on the father's side there was some consumption. The patient has always enjoyed moderately good health. She is married, the mother of four girls and one boy all living. The oldest is 13 and the youngest 5; all the girls have been more or less troubled with eczema. Since the birth of the last child the patient has had "abdominal trouble," but of what nature I did not learn. She has always had a nervous temperament; quick in action and thought. The bodily functions have always been regular with the exception of occasional bilious attacks and constipation. Menstruation has been and is still entirely normal.

While the nasal stoppage and sneezing were the symptoms which first compelled her to seek relief, she recalls that two years ago her hair, which before had been black and glossy, began rather suddenly to turn gray and become brittle. It did not come out to any great extent however. It is at present iron-gray in shade, and dry, but not coarse. The nails are dry and brittle, the teeth in fair condition owing to close attention. Her dentist has told her however, that the teeth were soft and easily broken. There are no fatty tumors, no moles or warts, no swellings in the supra-clavicular region. She has noticed no patches on the skin other than a scaly eczema behind the ear on either side.

The skin seems however generally somewhat thickened. My attention was particularly attracted to the color of the skin of the face. It was markedly white with a bright spot over each cheek. This is not constant nor is the redness of the nose, which she tells me is sometimes present. The lips are full and high colored, the brows and lashes both of good thickness. Except when she has a nervous perspiration the skin is dry. There is frequently a puffiness under the lids although no other signs of edema. The features are neither coarse nor broad. She has never noticed any watery edema either general or local. The abdomen has felt swollen on a few occasions, but that she refers to the abdominal trouble. The thyroid gland is of small size but is distinctly apparent. I have been unable to learn of any nervous symptoms other than an irregular feeling of weakness with coldness of the hands and feet. There is no paralysis, tremor, or inco-ordination. Sight, except for some hypermetropia, is good. Hearing is normal. Smell and taste are both considerably affected by the nasal stoppage. The voice is nasal in quality. Speech is not delayed nor does there seem to be any mental heaviness or slowness.

Examination of the blood showed: red blood corpuscles 5,800,000, leucocytes 4,625, ratio 1 to 1254, hemoglobin 65 per cent.

There have been no hemorrhages from the gums or nose. The urine showed no abnormalities. The temperature is 98.6 degrees. Appetite and digestion are fairly good. Feeling convinced from this history, that there was more than a local condition to contend with and as some of the symptoms of myxedema were present, viz.: dry thickened skin, capillary injection over the cheeks, dryness and brittleness of the nails and hair and possibly the appearance of the mucous membranes, I ordered dessicated thyroids gram 0.32. t.i.d. She was not seen again until Dec. 4, 1896, when she reported that the powders had relieved her very much. I had ordered only enough to last ten days, but she had had no return of the symptoms until two weeks previously. The prescription was renewed. When next seen, Jan. 18, 1897, she reported having taken thirty-two powders between December 4 and January 8. While taking them the nasal symptoms were almost entirely relieved. Examination of the nostrils shows lessening of the puffiness and waxiness. Since this date she has taken powders more or less regularly with considerable relief.

It will be seen that while the general symptoms were not absolutely confirmatory of myxedema they were marked sufficiently to induce me to try the therapeutic test and in view of the happy results attending this trial I think we can safely make the diagnosis.

1423 Walnut Street.

GENERAL AND LOCAL ANESTHESIA IN LARYNGOLOGY AND RHINOLOGY.

Presented to the Section on Laryngology and Otology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY JOSEPH S. GIBB, M.D.

Professor of Diseases of the Throat and Nose, Philadelphia Polyclinic; Surgeon-in-charge of the Throat, Nose and Ear Department, Episcopal Hospital.

PHILADELPHIA, PA.

In March, 1889[1], a very interesting discussion on the proper form of anesthesia to employ in nose and throat operations, took place in London. The discussion developed the widest differences of opinion among the eminent gentlemen participating in the debate.

It seems odd that notwithstanding our experience in these operations has so markedly increased since this memorable debate, there should still exist great differences of opinion.

This is to be deplored. While it is of very little moment as to the particular form of anesthesia an individual specialist uses in his practice, it is of vital importance as to the teaching of the great mass of our profession by whom these operations are being performed in increasing numbers year by year. If some order could be brought out of this chaos of opinion; a few plain and safe lines to guide the busy practitioner a good work would be performed.

For convenience of study the subject will be divided into four headings, namely:

1, Intra-nasal operations; 2, naso-pharyngeal operations; 3, pharyngeal operations; 4, laryngeal operations.

Intra-nasal operations. — Intra-nasal surgery has made prodigious strides since the advent of local anesthesia. Nor is this due alone to the fact that the comfort of the patient is less disturbed. By this method, we are enabled to follow each step of an operation deliberately and intelligently, and hence to do better work.

Under general anesthesia the patient is in the worst possible condition to make a satisfactory examination. The recumbent position (the only one tenable in chloroform and ether narcosis) is one unfavorable to proper illumination, an objection which has scarcely been overcome by modern electrical refinements.

The position and the anesthetic, both favor hemorrhage, which covers the field of operation and adds to the difficulties.

General anesthesia, therefore, is indicated in intra-nasal operations; 1, major operations, those in which large growths are to be removed, necessitating a considerable amount of dissection, and possibly involving the external tissues; 2, in large bony deflections of the septum, where it is necessary to break up the septum at its base; 3, in large bony spurs in which the relative position of the outgrowth to the surrounding tissues have been accurately determined; 4, congenital or acquired stenoses; 5, plastic operations.

The number of cases which come under the second and third groups, namely, deflections and spurs, are small, and one finds them growing less year by year as his experience in this work grows. It is seldom we know precisely the operative procedure we will follow in an individual case prior to the operation. For instance, in pronounced cartilaginous deflections, how frequently we find after the cartilage is freed a corresponding bony deflection, with perhaps exostoses and spurs.

We are not all favored with small fingers to enable us to determine by digital examination the extent and nature of deformities, nor are all nares of sufficient dimensions to permit such examinations to those so favored.

While breaking up a deflected bony septum or the removal of bony outgrowths are undoubtedly painful procedures, which pain no amount of local anesthesia can entirely annul, this discomfort is transient, and

[1] Discussion upon the paper of George Stoker on anesthetics in operations on the nose and throat, British Laryngologic Association, Wednesday, March 27, 1889.

the benefits accruing from a method which will enable us to have the field of operation under our view at all times greatly outweigh the haphazard methods we are obliged to pursue in general anesthesia.

There are, however, a number of conditions in which general anesthesia is necessary—which anesthetic shall we employ? In the discussion in London it was developed that chloroform had long been, and was still, in use in work of this nature. Dr. Silk believes that the routine use of chloroform is founded on the assumption that it is safest in children, and from which its use has extended to adults. Lennox Browne prefers the local anesthetic effects of cocain in intra-nasal operations, but gives a general anesthetic if it is indicated or desired.

He with Stoker, Silk, Dundas, Grant, and a number of prominent English laryngologists prefer the use of nitrous oxid in operations requiring but a few seconds. In those requiring a longer time nitrous oxid is given to produce insensibility and to avoid the discomfort of inhaling ether—the latter is then continued as the anesthetic.

In hospital work the plan of the London surgeons is ideal, but in private practice there are many difficulties in the use of nitrous oxid, and especially in operations at the bedside.

Chloroform can not be recommended for reasons which will be more fully discussed under naso-pharyngeal operations. Bromid of ethyl is too transient in its effect for these operations.

Ether then remains alone the safest and most reliable anesthetic.

The obstacles to the management of the patient which general anesthesia presents are in a measure met by care in position. The half-reclining or sitting position is not to be recommended. The one thing that would seem to justify such position in an intra-nasal operation would be that it is the most favorable in which to employ artificial light. Against this, however, is the utter uselessness of any light after the first incision, when the parts are covered with and obscured by blood. Indeed, in these operations one is guided almost entirely by the knowledge he has gained of the parts prior to the operation.

A very cogent argument against this position is its danger—one not to be lightly set aside, especially in the use of chloroform.

The Trendelenburg position, or one with similar objects in view, is without doubt the most satisfactory for the following reasons: 1, with proper electric appliances as good illumination may be obtained in this as in any other position. At our clinic at the Episcopal Hospital an ordinary incandescent light with a reflecting surface back of the globe is placed in the hands of an assistant and the light is thrown upon the field of operation at any desired angle. The various forms of electric head-lights may be employed with equal, perhaps, greater advantage; 2, this position causes the blood to gravitate to the post-nasal and pharyngeal spaces, whence it may be repeatedly removed by a sponge in the hands of an assistant, or, if at any time the blood flows too freely the head may be turned to one side and the blood allowed to escape from the opposite nostril or the angle of the mouth. This gravitation of the blood posteriorly not only lessens the danger of aspiration but it in a large measure frees the anterior portion of the nares, thus enabling the operator to have a clearer view of the field of operation.

General anesthesia in intra-nasal operations is but a sorry substitute for local anesthesia, and should be employed only when the necessities of the case urgently demand it.

We are obliged, at times, to meet the wishes and desires of our patients; some of whom prefer general anesthesia because the operation can be done without their consciousness. At the same time it seems to me a folly to undertake such operations merely to please the patient unless we are reasonably sure we understand beforehand every necessity of the case.

The larger number of intra-nasal operations being best undertaken under local anesthesia, we must now decide which of the few local anesthetics will serve our purposes best, and the manner of its use.

Cocain has held undisputed sway as a local anesthetic for about fifteen years and, in the main, leaves little to be desired. Those who have used it freely, however, have now and then observed effects which have given rise to anxiety, and a few fatal cases have been reported from its use.

It has always been a matter of doubt to me in these cases of cocain poisoning as to the part played by the shock of the operation. A nervous woman cuts her finger and faints at the sight of blood; this same woman should certainly be expected to faint during an operation on her septum. I believe that some of the cases which have been regarded as cocain poisoning are of this nature.

A very few can not be explained in this manner and we are forced to admit that in some subjects an idiosyncrasy exists to the drug.

More recently, eucain has been extolled as the equal of cocain in anesthetic power and, it is asserted, possesses no such tendency as the latter drug to produce intoxication.

Our experience with this new anesthetic is necessarily too limited to assert positively as to the latter claim. There is no doubt in the writer's mind as to the validity of the former.

In an article published in the *Philadelphia Polyclinic*, Jan. 23, 1897, the author gave an experience of six months use of this drug in the clinics of the Episcopal and Polyclinic Hospitals. It was found to have equal anesthetic power with cocain, both as to intensity and duration of anesthesia in the larger number of cases.

Its power to reduce engorged turbinates was also equal to that of cocain. In the pharynx, while it possesses equal anesthetic power to cocain, it lacks those unpleasant suffocative, choking sensations which the latter drug at times induces. It is, therefore, much pleasanter in its effects in this locality. In no case were any symptoms approaching intoxication induced.

These results have been confirmed by a riper experience. Eucain is now used at my clinics in all operations in the nares, naso-pharynx and pharynx, except in those few instances in which cocain seems to have a better effect.

Its use in the larynx has been abandoned because cocain has equal anesthetic power and is slightly less irritating and hence less apt to produce annoying and troublesome spasms.

The pleasantest manner of obtaining anesthesia in the nasal chambers is as follows: First spray both chambers with a 2 per cent. solution of whichever anesthetic we elect, to obtain tolerance for the harsher

methods to follow. After waiting for one minute saturate a small pledget of cotton with a 4 to 10 per cent. solution of the drug and allow it to lie at the site of operation for from five to eight minutes.

Antipyrin in 5 per cent. solution has been found to intensify and prolong the anesthetic effect of cocain or eucain; therefore, if the projected operation promises to be a tedious one after the removal of the tampon of cotton, a spray of antipyrin (5 per cent.) may be passed through the nasal chambers.

Antipyrin also has a decided hemostatic effect and in operations upon the septum or the posterior turbinates, parts that are quite vascular, this drug will prove to be an agent of decided advantage. It is, however, much too irritating for use in the nasal chamber, unless preceded by the free use of eucain or cocain.

With these two reliable local anesthetics the rhinologist is well provided, and intra-nasal surgery is robbed of much of its terrors.

Naso-pharynx.—The most frequent operative procedure the surgeon is called upon to undertake in the naso-pharynx is that for the removal of adenoid vegetations from the vault.

There is great difference of opinion existing among surgeons regarding anesthesia in these cases.

Some viewing the operation as trivial, eschew the use of anesthesia in any form; others advise a local, and still others always employ a general anesthetic.

Probably much of this confusion and difference of opinion arises from an improper selection or arrangement of the class of cases.

In deciding upon the use of an anesthetic we should be influenced by the particular form of operation we are to employ and also by the age of the patient.

In adults and children of riper years who may be properly controlled these growths are best removed by means of the postnasal forceps.

These instruments should never be employed under general anesthesia, save by those thoroughly familiar with work of this nature and then guided by a finger insinuated back of the soft palate; this latter precaution is only possible to those having small digits, and hence the application of this method is limited.

The use of the forceps without the aid of the mirror in a space hidden from view has always seemed an unsurgicial proceeding and especially since we have the means at our command to bring the parts thoroughly under the eye and to follow every step of the operation.

In those cases, therefore, of hypertrophy of the pharyngeal tonsil in adults or older children, in which it seems preferable to employ the postnasal forceps, the operation should be performed under the local anesthetic influence of eucain or cocain and by the aid of the rhinoscopic mirror. There are many adults and older children either too nervous or with pharynges ill adapted for rhinoscpic work, these then will come under the same rules as those to be presently adverted to in the case of children.

By far the larger number of cases of adenoids occur in young children. The most popular methods employed for their removal are the curette, the fingernail or both combined.

In selecting an anesthetic, or in determining whether or not to use one, the surgeon is inflenced by the estimate he attaches to the operation. In the hurry of life and in oft-repeated successes he is apt to regard this as a trivial operation and one unworthy of much time consumed in the performance. Considering the proximity of important structures and the possibility of injury to the same, does this seem good judgment?

A general surgeon would deem it the height of imprudence to operate on a case and, especially if an anesthetic were considered necessary, dismiss it with little or no directions. He would rather have the patient remain in bed at least for a day to avoid any possible complication by means of chilling the surface, a contingency very possible to a child going into the open air a short time after an operation.

Adenoid operations are of daily occurrence in our clinics with and without the use of anesthesia and patients are dismissed with little instructions. It may be said that few accidents happen as a result of such methods. It is true we see few complications, but can we be certain they do not occur among a class of patients notoriously difficult to keep in view? Have we not seen acute inflammatory troubles of the middle ear follow this operation? Is it not possible that the apparent return of the trouble within a short period of time may be due to inflammatory conditions induced by exposure after the operation?

It has always seemed that the best interests of our little patients would be served were we to regard these operations of sufficient importance to demand at least one day's stay in bed.

These views have been borne out by my experience. At the Episcopal Hospital those cases treated in this manner have been free from complications of any sort and the results have been most satisfactory.

The operation of curettement of the pharyngeal vault is a painful one; slightly less so by the use of eucain or cocain. It is therefore scarcely a humane procedure without an anesthetic in young children. To forcibly hold a nervous, irritable child and subject it even for a few seconds to severe suffering is a great tax to the nervous energies of that child and might lead to serious consequences.

The pain together with the gagging produces such contraction of the phayngeal muscles as to place the parts in the most unfavorable position for good and thorough work.

General anesthesia should be employed in the removal of adenoids for the following reasons: 1. The operation can be performed in a more efficient and satisfactory manner. 2. It is attended with less danger of depressing effects to the nervous system of the child. 3. It serves as an extra inducement to treat these as surgical cases requiring care in the after-treatment and enables the surgeon to keep the patient in bed at least one day and thereby conduces to a successful result.

The operation can be done so quickly that the anesthetic which seems eminently suitable for these cases is nitrous oxid gas, the effects of which are transient.

In the London Throat and other hospitals in Great Britain this is the anesthetic employed, and in the discussion in London, already adverted to, the consensus of opinion was in favor of the use of this gas.

Dr. Silk[2] prefers it because it is pleasant, safe and can be administered in every position of the patient. No previous preparation is necessary and the recovery from it is rapid and perfect and the after-effects *nil*.

Lennox Browne[3] uses no uncertain language in his advocacy of nitrous oxid gas in these operations. He

[2] Silk: Journal of Laryngology, London, 1889, iii, p. 177-181; 238-242.
[3] Browne: Med. Press and Circular, London, 1893, n. s., lvi, p. 136.

says: "The rapidity with which the patient can be anesthetized by gas, the almost constant absence of any unpleasant after-effects, the exceedingly short interval required for complete recovery of consciousness in addition to the incalculably greater safety on general grounds of its administration over any other agents, not only constitnte strong arguments for its employment where the time required for the completion of the operation does not exceed from forty-five to fifty seconds, but actually renders the use of other agents culpably unjustifiable."

Nitrous oxid has had more or less extensive trial in this country and is well thought of by those familiar with its use. In hospital practice, and especially if care in the after-treatment follows its use, nitrous oxid leaves little to be desired as an efficient and safe anesthetic in the removal of adenoid growth in young children. In private practice, however, the cumbersome nature of the apparatus necessary for the production of this gas renders its use awkward, save in office work and here its use can not be recommended for reasons already stated.

Impressed as the writer is with the advantages of treating these as any other surgical cases, where it is possible to do so, we must needs search for an anesthetic safe and reliable which may be employed at the bedside.

Chloroform has long been use and especially by the English surgeons.

The chief reasons for its use have been that it is pleasant in its effects, was supposed to be harmless in children, quick in its action and free from unpleasant after-effects. Bosworth in the recent edition of his work favors this anesthetic.

When it is considered that no less than nine deaths occurred in England in one year from the use of chloroform, it should cause the surgeon to hesitate before employing it.

Dr. Silk, the anesthetist for the Great Northern Central Hospital clearly and forcibly states the advantages and disadvantages of chloroform in these operations. I quote from his paper: "I believe that the routine use of chloroform is founded upon the assumption that it is safest for children, a general proposition with which I in no way agree, and from which I fancy its use has extended to adults. Other advantages claimed for it are:

1. That it is simple to administer, and the resulting narcosis is easily maintained. It does not come within the scope of this communication to point out that these advantages are much exaggerated, but even if this were not the case I hardly think that the convenience of the operator should be placed above the safety of the patient.

2. That the bleeding and turgesence of the mucous membrane is less than when ether is used; but even if this were true the difference, as I have already pointed out is so slight that this advantage almost sinks into insignificance.

3. That the primary narcosis is more profound. This should I think be classed rather as a disadvantage, inasmuch as the zone maniable, to which I have already referred, is in respect to chloroform very narrow, and therefore even if no respiratory embarrassment prevailed, its use is always attended with a certain amount of risk; much more is this the case when the comparatively pure vapor which accumulates at the back of the throat may be inhaled at any time and is quite beyond our control.

The objections if not numerous are weighty:

1. I can fully endorse the view that chloroform administrations are always a source of anxiety to the anesthetist and in some instances of narrow escapes to the patients, and this is much more the case in naso-pharyngeal operations. On account of the accumulation of the blood at the back of the throat, and consequent interference with the respiratory functions, the heavy chloroform vapor speedily collects above the larynx, in a nearly pure or highly concentrated state. Hence the attacks of syncope and apnea which so commonly occur without the slightest warning, when chloroform is being administered. Its slight diffusibility, too, tends to permit of its accumulation in the lungs, and is accentuated by the respiratory failure. Hence the attacks of syncope and apnea occurring as they frequently do, some time after the administration has been withdrawn.

2. The after-effects of chloroform are often very prolonged. Such immediate effects as nausea, the loss of blood swallowed, are probably no better and no worse than those attendant upon the administration of ether, but profound prostration and digestive disturbance are said to continue for days.

3. Its administration in any but the absolutely recumbent position is quite inadmissible.

Bromid of ethyl is highly thought of both by the German surgeons and a few in this country. So far as the quick action and pleasant effects are concerned, this drug seems peculiarly fitted for these operations.

Morgenthau[4] of Chicago reports the results in 100 cases of adenoids in which bromid of ethyl was the anesthetic employed, and refers to Moritz Schmidt of Frankfurt-on-the-Main as having used it in 200 cases.

Morgenthau thinks that bromid of ethyl should not be used in chronic heart disease, 1.85 c.c. for children and 2.9 to 3.7 c.c. for adults is sufficient. In from forty to sixty seconds breathing becomes stertorous and for two minutes the patient does not feel pain. He operates in the upright position with the head inclined slightly forward so that the blood may flow out of the mouth.

He finds that the anesthesia, operation and recovery takes from five to seven minutes.

In the 100 cases of Morgenthau and 200 of Moritz Schmidt no deaths and but few unpleasant symptoms occurred.

Bromid of ethyl has as advantages, quickness of action, pleasantness both in the administration and the after-effects. The unfortunate result of the first introduction of this drug in Philadelphia by the late Dr. Levis, in which two patients succumbed, has deterred the profession there from its use. It is claimed, however, by those familiar with its use that the drug is nearly as safe as ether and that the early deaths were due to imperfections in the manufacture or in the substitution of bromid of ethylene a much more dangerous product.

The testimony of so many worthy and careful observers would seem to warrant that this drug which has so many advantages, should have a more extended trial.

Ether is the safest and perhaps the most widely useful anesthetic.

It is often unpleasant both in administration and after-effects but these are of slight importance in the security one feels in its use and in hospital work; fol-

[4] Morgenthau: Ethyl Bromid, JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1895, xxiv.

lowing along the practice of the London surgeons its use may be preceded by the more pleasant nitrous oxid gas.

In the use of ether in removing adenoid growth from the vault of the pharynx, the anesthetic should be used to complete relaxation.

The writer is not in sympathy with those who use it short of this stage and has many times witnessed operations which have been delayed and complicated by the struggles and cries of the patient.

Once complete relaxation and insensibility have been obtained the anesthetic may be permanently withdrawn and the operation proceeded with, uninterrupted by any movement on the part of the patient. Given in this manner it is quickly recovered from and is much less liable to produce vomiting and other unpleasant effects.

The same method of procedure is applicable in those cases in which it is found necessary to remove both the faucial and pharyngeal tonsils. Here, however, it is best to push the ether a little more thoroughly than is the case where the simple adenoid operation is done, for the reason that after excision of the tonsils some little time is consumed in allowing blood to escape from the mouth before curetting the vault.

Incidentally the position of the patient during these operations is of importance. The most satisfactory results are obtained in operations in the naso-pharynx in that position which places the posterior wall of the pharynx and naso-pharynx in the most dependent position. This is accomplished by the Trendelenburg position or a modification of the same. By this method we are not delayed by gurgling of blood in the pharynx and symptoms of asphyxia and the danger to respiration is at a minimum.

At the house of our patient the true Trendelenburg position is not always feasible. In this case all that is necessary to obtain the same result is to allow the head to hang over the edge of table or bed. The blood is sponged from the pharynx by an assistant, the patient is turned on the side and the blood permitted to escape from the nose or the angle of the mouth.

Pharyngeal operations.—Nearly all the operative measures the laryngologist is called upon to perform in the pharynx can be accomplished under local anesthesia.

Eucain is to be recommended in this locality. It causes less discomfort to the patient and it is also probably less likely to give rise to unpleasant general symptoms.

Hypertrophied tonsils, the most frequent condition calling for surgical interference in the pharynx, when uncomplicated by anenoids at the vault, may readily be excised without the use of a general anesthetic.

This operation is accomplished so quickly, with so little pain (which latter may be annulled by local anesthesia) and the work can be done so effectively that it seems an unnecessary complication to induce general anesthesia.

In nervous, irritable children in whom the shock of operation and the necessary restraint might prove serious to the nervous system of the child, transient anesthesia is to be recommended. Nitrous oxid is eminently useful in cases of this nature.

Hypertrophied tonsils, associated with adenoid vegetations at the vault should be treated in a similar manner to that spoken of in the discussion on the removal of hypertrophied pharyngeal tonsils.

Laryngeal operations.—All intra-laryngeal operations are performed under local anesthesia.

Cocain is preferable in the larynx, because its anesthetic properties are equal to eucain and it is distinctly less irritating and consequently less liable to produce unpleasant spasms. By local anesthesia the modern laryngologist is enabled to remove growths formerly deemed inoperable or only removed by splitting the thyroid cartilage, thus causing subsequent impairment of the voice.

The various major operations, such as laryngectomy, thyrotomy and tracheotomy, are accomplished under general anesthesia. Recently, however, a number of tracheotomies have been done with cocain injected along the line of operation as the only anesthetic employed.

This method may occasionally be possible in adults or in children already narcotized by prolonged dyspnea, but it would be exceedingly unwise to advocate it as of general utility in children, upon whom we are most frequently called upon to do this operation.

1804 Chestnut Street.

TONSIL AND ADENOID OPERATIONS UNDER ANESTHESIA BY NITROUS OXID, AND NITROUS OXID AND OXYGEN: A PRELIMINARY REPORT.

Presented to the Section on Laryngology and Otology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

BY W. E. CASSELBERRY, M.D., AND F. MENGE, M.D.
CHICAGO, ILL.

The desirability of an anesthetic that would obviate the general objections pertaining to chloroform and ether in operation on tonsils and adenoids has been the source of much research. The chief objection to chloroform lies in its danger; bromid of ethyl has scarcely attained any greater confidence; ether, while reasonably safe, is so prolonged in its effects as to be inconvenient for this purpose. Nitrous oxid alone has been employed by a few operators, notably at the Central London Throat Hospital, but the available operating period from a single administration is almost too brief for the satisfactory removal of both the tonsils and adenoids. Experience has proven this anesthetic, however, to be safer than any other and to possess the advantage of a rapid revival of the patient; therefore following Gardner, Hunt and Hewitt of England, and Van Arsdale of New York, we have sought to modify the action of nitrous oxid by the addition of oxygen in order to render it more available and less objectionable for this operation.

As regards the safety of nitrous oxid, it is estimated by H. C. Wood that it is given in 750,000 cases annually and we have been able to learn of but thirteen deaths fairly attributable to it.

The anesthetic effects of nitrous oxid gas were first noted by Sir Humphrey Davy, about the end of the last century, and it has since, from year to year, come into more general use.

Under nitrous oxid the respiration becomes slower and if the gas be pushed, a complete cessation of respiratory movements eventually takes place. The heart beats quietly, fully and regularly under this gas. The pulsations are somewhat slow in profound narcosis. There is, however, but slight danger from heart failure resulting from the inhalation.

In animals killed by nitrous oxid gas the heart goes on beating even after the respirations have quite stopped. It is therefore less important to watch the pulse than the respiration.

So it will be seen that in the administration of nitrous oxid, the respiratory tract is most involved, the respiration usually rapid from the excited condition of the patient, after a short though variable period of inhalation of from one to two minutes, becomes deep and even snoring, and a complete anesthesia with unconsciousness is produced, lasting from thirty seconds to one and one-half minutes. But accompanying this and keeping pace with it, we have all the phenomena of asphyxia, due to a deficiency of oxygen in the air passages and tissues of the body.

One of the most evident means of avoiding this formidable objection with its cyanosis, stertor and general asphyxiation, was the addition of pure oxygen gas to the nitrous oxid, but, however, in such proportion that its value as an anesthetic should not be impaired.

The question as to whether nitrous oxid is an anesthetic *per se* or depends upon the accompanying asphyxia for its anesthetic effect, has never been definitely determined. From the fact that anesthesia can be produced by the gas with from 5 to 12 per cent. of oxygen it would seem that nitrous oxid is, in itself, an anesthetizing agent, although even then the slight asphyxia usually induced doubtless serves to augment the anesthetic effect.

A number of combinations have been used by different authors with varying success. The late Prof. Paul Bert, by administering under increased atmospheric pressure a mixture of oxygen and nitrous oxid, succeeded in producing a prolonged and profound anesthesia, at the same time maintaining normal oxygenation of the blood. He used 20 per cent. of oxygen, for the reason that the same percentage exists in atmospheric air. He obtained the necessary atmospheric pressure by having built, a large glass operating chamber, in which he together with his assistants and the patient were hermetically sealed, the desired density then being regulated through the medium of an air pump.

Van Arsdale sought to dispense with this chamber by substituting a tight fitting mask, giving the gas with 10 per cent. of oxygen, under pressure, with good results.

Hewitt of London, after experimenting upon a number of cases, found a 12 per cent. oxygen mixture produced anesthesia after an average inhalation of 126 seconds, of 44 seconds duration, while the average quantity of gas used was $8\frac{3}{4}$ gallons.

Having seen a number of anesthesias for dental purposes, we used at first the pure nitrous oxid on several cases and found that the gas, when pushed to its physiologic effects, afforded an anesthesia sufficient for operating purposes of about forty-five seconds duration, so we at first abscised the tonsils, then re-applied the gas and finished the adenoids, practically, with a second anesthesia.

Then we tried a 25 per cent. oxygen mixture but after twelve minutes and no anesthetic effect, we substituted the pure nitrous oxid, the patient being fully under the influence, to loss of eye reflexes, in less than a minute.

After this, some six cases were operated on with an approximate 10 per cent. mixture and with two applications of the gas, the average time of the first administration being about four minutes, while that of the second was about two.

Then we still further reduced the amount of oxygen and anesthetized completely with an approximate 5 per cent. mixture without much cyanosis or asphyxia in an average of two minutes. We also found that this mixture so lengthened the available anesthetic operating time, that we could remove both tonsils and the adenoids with one application of the gas, this complete operation occupying about one minute.

This is essentially a time-saving operation, and to do it every detail must be arranged beforehand; every instrument that could possibly be of use must be within easy reach of the operator. We inserted the mouth gag, using an O'Dwyer gag, before beginning the anesthetic. The patient was then placed in our usual operating position on the lap of an assistant, the head being on the assistant's left shoulder. The operator then turned on the gas from both cylinders, filling the intermediate rubber reservoir, whence the mixture was conveyed to the patient through a rubber tube to a snug-fitting mask, allowing absolutely no air to enter, this mask being held tightly over the nose and wide open mouth of the patient by the operator until the full effect of the anesthetic had been reached, recognized as with other anesthetics, by unconsciousness, loss of eye reflexes, etc.

The mask being removed, the patient is ready for operation. Both tonsils were at first abscised, in half the cases by a Mathieu and the other half with a Casselberry tonsillotome, and the adenoids were then immediately removed by a Gottstein curette. This operation can be performed without undue haste in one minute in the average uncomplicated case, but we do not wish to be understood as advocating such a quick method in every case, for when the tonsils are bound down by adhesions or other complications exist which require time and deliberation during the operating, then nitrous oxid is not a suitable anesthetic.

We have operated on fifteen cases in this manner; all were children, the youngest being $2\frac{1}{4}$, the eldest 11 years of age, five were boys and ten were girls, and all but one case were afflicted with both enlarged tonsils and adenoids. The patients were in all degrees of excitement, but immediately after the first two or three spasmodic inhalations they became calm and the respirations were full and regular.

The appended schedule gives the time of the first inhalation, time of operation on tonsils, the second anesthesia, the "adenoids" and age.

	Anesthetic.	Tonsils.	2d anesthetic.	"Adenoids."	Age.	Gas mixture.
I	2 min.	1 min.	1½ min.	½ min.	4 yrs.	N_2O
II	3 "	1½ "	1 "	½ "	6 "	N_2O
III	11 "	1 "	½ "	½ "	4½ "	(N_2O 75 O 25) (N_2O)
IV	6 "	1½ "	2 "	½ "	8 "	N_2O 90 O 10
V	2½ "	½ "	½ "	½ "	5½ "	N_2O 90 O 10
VI	1½ "	½ "	1 "	½ "	4 "	N_2O 90 O 10
VII	5 "	½ "	. . . . .	½ "	5 "	N_2O 95 O 5
VIII	3 "	1 "	. . . . .	½ "	5½ "	N_2O 95 O 5
IX	2 "	¼ "	. . . . .	½ "	2¼ "	N_2O 95 O 5
X	1 "	¾ "	. . . . .	½ "	4 "	N_2O 95 O 5
XI	2 "	½ "	. . . . .	. . . . .	9 "	N_2O 95 O 5
XII	1½ "	½ "	. . . . .	¼ "	11 "	N_2O 95 O 5
XIII	4 "	½ "	. . . . .	½ "	5 "	N_2O 95 O 5
XIV	8 "	1½ "	. . . . .	½ "	4 "	N_2O 95 O 5
XV	1 "	½ "	. . . . .	½ "	3 "	N_2O 95 O 5

The apparatus required is rather cumbersome and heavy and consists of the face piece or mask, the rubber reservoir and the cylinders of oxygen and nitrous oxid. The mask is made of a metal frame which is covered by rubber, which at its edge, at the point of contact with the face, is in two layers and may be inflated. It is fitted with an expiratory valve as well as one whereby the gas may be turned on or off.

The rubber bag or balloon has a capacity of five gallons and serves as an approximate measure of the amount of gas consumed as well as for the mixing of the gases and on it, also, we made the necessary pressure to force the gas to the patient. This apparatus we purpose modifying by the substitution of a cylindric gasometer for the rubber bag.

Nitrous oxid gas is now put into the liquid from under high pressure and keeps in this condition indefinitely, being placed in steel bottles. Oxygen in copper cylinders is now well known, while rubber tubing, with a junction, forms the connection with the bag.

The advantages of this mixture of gases over chloroform and ether are: 1, the absence of danger; 2, no preparation whatever is necessary; 3, the upright position usually desired may be safely assumed; 4, hemorrhage seems in no way to be affected by it; 5, the time of the whole proceeding is greatly lessened, from an hour and a half to as many minutes; 6, the after-effects, the vomiting and retching, are entirely obviated, and the patients may be safely removed to their homes within fifteen minutes.

It would only be fair to state the disadvantages that have occurred to us: 1, somewhat cumbersome apparatus required; 2, greater number of assistants desirable; 3, haste with which it is necessary to operate.

In reference to the haste, after some experience with the method, the operator finds that he has more time at his disposal than he at first thought possible.

We would say in conclusion, that we have in nitrous oxid mixed with a small percentage of oxygen, an anesthetic that is relatively devoid of danger, taking only a few minutes to administer, and giving a sufficiently long narcosis for the ordinary tonsil and adenoid operation and which is particularly suitable for dispensary use.

LITERATURE.

British Medical Journal, Feb. 21, 1891.
American Journal of the Medical Sciences, August, 1891.
New York Medical Journal, March 7, 1891.
Dental Cosmos, November, 1891.
Lancet, 1889.
Buxton: Anesthetics.
H. C. Wood: Therapeutics.
Deutsche Medicinische Wochenschrift, 1886.
Comptes Rendus des Séances de la Société de Biologie.
London Clinical Journal, Aug. 26, Sept. 2, 1896.

DISCUSSION ON PAPERS OF DRS. GIBBS AND MENGE.

Dr. Roe—Some years ago, before cocain was introduced, I used nitrous oxid gas for small operations and particularly cautery operations in the nose, but since cocain was introduced I have abandoned its use altogether. Nitrous oxid gas and bromid of ethyl are serviceable only in operations requiring but a few moments for their performance; whereas in operations that are at all prolonged they are entirely insufficient, and cocain, chloroform, ether or some other less evanescent anesthetic, either local or general, must be resorted to. In some cases the operation for the removal of adenoid growths and also enlarged tonsils can properly be performed in from forty-five to sixty seconds, but in many other instances the conditions are such that it is absolutely impossible to properly perform the operation thus quickly; therefore nitrous oxid gas or bromid of ethyl are adapted only to a limited class of cases. In adults and older children I have found cocain anesthesia quite sufficient for these operations, but in young children I use chloroform only. For hospital and clinical work, nitrous oxid gas and bromid of ethyl simply have the advantage of expediting matters somewhat. I have not only had no trouble from the use of chloroform, but have had most excellent results and have not felt the necessity of using bromid of ethyl, which is sometimes troublesome to procure perfectly pure, or of bothering with the cumbersome apparatus which the use of nitrous oxid gas requires. In children the use of chloroform is very simple and perfectly safe. It affords ample time for the performance of the operation, and with the proper manipulation of the child there is no danger of the inspiration of blood into the trachea, nor are there any other conditions that contraindicate its use.

In adults, the chief danger in the use of chloroform lies in the concentration of the vapor or in the exclusion of sufficient oxygen, and it is to obviate this danger that oxygen gas mixed with chloroform vapor is employed. Three years ago, while in London, I procured a new apparatus for administering chloroform, devised by Krohne & Sesemann, and since that time a similar apparatus has been made by George Tiemann & Co. of New York. The mask in this apparatus is so arranged that there is free ingress through the center for atmospheric air, while the chloroform is propelled into it, in the form of vapor, by passing the air through the bottle containing the chloroform. When there is prospective danger from the use of chloroform, oxygen gas can be substituted for the ordinary atmospheric air forced through the chloroform liquid in the bottle. By the employment of this apparatus, the use of chloroform is not only rendered perfectly safe for children, but also for all adults in whom there is not some physical complication to contraindicate its use.

In Paris they use chloroform entirely as a general anesthetic and it is not considered dangerous. I have in a number of instances seen the Parisian surgeons push the chloroform far beyond the point that we would consider safe and the patients recover all right.

We may reasonably conclude that the use of nitrous oxid gas and bromid of ethyl as anesthetics is of special service in those adenoid, tonsillary and nasal operations in children and nervous and sensitive adults which can be quickly performed, and especially in clinical and hospital work, in which it is necessary or desirable to dispose of the cases quickly; but that in many of these same operations, which can not be so expedited and at the same time properly performed, other anesthetics, as ether or chloroform, must be resorted to.

Dr. Martindale—My knowledge of the use of nitrous oxid has been limited to the observation of 100 cases in the Central Hospital of London. My personal use of nitrous oxid is limited to the external auditory canal and peritonsillar abscess. My adenoid operation requires more time. Dr. Mackenzie has published his impressions as to the use of cocain in the nasal passages in connection with general narcosis. Since then it has been alluded to by Dr. Cohen and others. I have found it a valuable adjunct, and several of my colleagues in Minneapolis have found it useful. I would not undertake an extensive operation on the naso-pharynx without first spraying it with a solution of cocain. The use of the general anesthetic is attended with less danger.

Dr. Roe—Cocain does not seem sufficient to take away the pain. Bromid of ethyl makes the patient half unconscious, so that he is conscious of the operation but feels no pain.

Dr. Scheppegrell—I would use bromid of ethyl where an operation can be done in a short time, as there is comparatively less danger in a shorter anesthesia. If I can not complete the operation with the short anesthetic, I give chloroform. Some nine months ago I substituted eucain for cocain. I have used bromid of ethyl for four or five years in all cases of short anesthesia, without bad effects. Everything should be ready beforehand in these operations. Where children are old enough to have the gag placed in the mouth without exciting them, it should be done beforehand. If this is not possible, give the anesthetic to a slight extent, then apply the gag and complete the operation. I oppose prolonging the anesthesia to operate on both tonsils and adenoids. I have operated in this way on a patient over 18 years old, and have seen severe hemorrhage. In case we have this complication we should limit ourselves to either the adenoids or the tonsils. In using bromid of ethyl it is important to get pure preparations. In one case a druggist sent me nitrite of amyl. I have nothing to say against nitrous oxid except that it requires such complicated apparatus. Unless some good reason can be found against bromid of ethyl, I prefer to use it if the pure article can be obtained. I know of no fatal results.

I think the difficulties of operating in the sitting position have been rather exaggerated. I always operate in that position, with an assistant holding the head of the patient well forward. The advantages over the Trendelenburg position are marked, because the patient sits in front of you, and the relation of the parts is better maintained.

It would be impossible for me to do adenoid operations in forty-five to sixty seconds. I think many of us would require a longer time than was mentioned in the paper.

Dr. Bliss—I say emphatically that adenoid operations on children ought to be done under general anesthesia. In Europe and in many parts of this country it is done without anesthesia, but I consider this almost cruelty. If you do not complete the removal at one operation, you will not induce the child to submit a second time. We may remove adenoid vegetations in a child under 1½ years old without anesthesia, because the

nervous system is not so highly developed, and the child will not remember so well. For general anesthesia in children I prefer chloroform. It is just as safe as ether and more agreeable. Since bromid of ethyl and nitrous oxid have been used, I have tried them in a number of cases. One objection is that we never know exactly when the right moment has come to operate. In some cases when the arm drops there is sufficient anesthesia, but in others there is not. Also you have to introduce the gag before operation. With a timid child the preparations beforehand will make him dread the operation. The reflexes are not abolished and the child may scream. An operation under general anesthesia should be done either in a hospital or at the house of the patient, and not in the office.

As to the nitrous oxid, I operated some years ago on a dental student who had hypertrophy of the turbinal. I did it in the anesthetizing room at the dental college. I was surprised to see how easily it could be done, and I was also alarmed at the almost carelessness with which the dental surgeons produced a case of cyanosis. In the fifteen or sixteen cases in which I have used nitrous oxid, it was given by a dentist. The patient has the disadvantage of seeing the preparations beforehand, and unless he has fortitude he gets frightened. General anesthesia should always be used in adenoid operations, and the method is largely a matter of choice. I think that chloroform with the addition of 5 per cent. of oxygen will be of value.

Dr. MYLES—The shock of giving a child ether I think is as great as that of doing an operation. In regard to the operation, we may make an actual diagram and topographical description of the disease, then line out as much as nature intended us to have of the tonsils. If you operate on children who have fairly good tonsils, you will have very little trouble. If you pass your finger up into the posterior nares and tonsils and the child has adenoid growths, you will also find large hypertrophy of the lingual tonsil and fauces. But to run a curette up there and remove all this tissue takes ten or fifteen minutes. One firm sweep upward and backward will remove a larger amount than you can get by any other process. The instrument must be suited to the case, and must be of proper size and properly sharpened, so that it will engage the tissue and not bounce over it. I do not think it right to subject the child to an anesthetic, especially to ether when the work can be done without it. We should use the simpler methods.

Dr. STUCKY—I am opposed to general anesthesia in operations for adenoids except in very rare cases. There is more shock in giving the child an anesthetic than there is in the operation. Make an application of cocain and then place a sheet around the child, fastening it behind and before, and slip in the mouth gag. After that there will be no more resistance or screaming and you can perform the operation thoroughly and with less shock. Keep the patient quiet for several hours after operation.

Dr. MERRICK—I think there is more danger of hemorrhage with general anesthesia. I operated on a child four years old, and curetted under cocain. There was bleeding from 12 that day until 12 at night. If I had used a general anesthetic I think the child would have died. I have operated in about 100 cases and have used nitrous oxid gas in two and chloroform in one. A very severe hemorrhage followed the use of the anesthetic. I investigated the proceedings of laryngologic bodies for one year. I found five cases of death from tonsillotomy. I did not find a single case where fatal hemorrhage occurred except where a general anesthetic was used. Meyer used no general anesthetic. In my clinic I never think of using one. I have a grooved table upon which the patient is held by an assistant and the operation is completed in one minute. The child may cry. Two minutes after the child is released it is all right. Only in very extensive cases is a general anesthetic justifiable. You can do these operations, certainly in 95 per cent. of cases, without any risk except that of hemorrhage.

Dr. BLISS—I have just left a little patient, five years old, whose throat I have curetted without any anesthetic whatever. He was just as fond of me as though I had not done it. A great deal that is said on this subject is overdrawn.

Much of this adenoid tissue is absolutely physiologic, and the line of demarcation must be drawn with great caution. In the younger cases we can hardly use the visual exploration with any satisfaction. Digital exploration is almost a necessity. In the matter of curettement, the finger is far better than any other instrument. We have the pulp of the finger as a protection and can squeeze out the adenoid tissue with a minimum of bleeding and danger. If a large mass is to be removed, we can do it in nine cases out of ten without an anesthetic. Where we have a large operation to do we must have a general anesthetic, and in Philadelphia this will usually be ether.

Dr. MACKENZIE—Unless indications are strongly to the contrary, and unless the child is rebellious, I prefer to operate on adenoid growths without an anesthetic. It takes longer, but I make a more complete operation. It is sometimes necessary to prevent recurrence, to employ vigorous curettement. If so I sometimes resort to an anesthetic, generally to bromid of ethyl. If a general anesthetic is to be administered to children, I prefer to give chloroform first until comparative quiet is secured, and then keep up the narcosis with ether. I have used bromid of ethyl in these cases for years, and have never had an accident. The drug must be pure, however. It can now be obtained in hermetically sealed tubes. Care must be taken also to exclude the air. If these precautions be taken I think it is perfectly safe. As to the removal of adenoid growths and both tonsils in forty-five to sixty seconds, in my hands the operation would not be complete. It seems to me absolutely impossible in a very short time to reach every nook and cranny of the naso-pharynx and to be sure that the extirpation is complete.

Dr. MARTINDALE—As to using ether in the upright position, I have seen one death from a dentist using ether in his dental chair, and that is enough to deter me from using it in that way. I have used nitrous oxid with very pleasant results. After one becomes accustomed to the alarming appearance of the patient I think there is no danger; and if Dr. Casselberry has added oxygen, which increases the narcosis and lessens the danger, this will be an ideal anesthetic. But the majority of cases which need an anesthetic should be placed under narcosis for a longer time than one minute.

Dr. COBB—I will say a word in the defense of ether in the upright position. In the Massachusetts General Hospital, ether has been used. In the last eight years we averaged over four adenoid operations a week, and there has not been one death. I think that is fairly good evidence of the safety of ether.

Dr. GIBBONS—I would call attention to the necessity for knowledge as to forced respiration, etc. A patient who does not recover from ether or chloroform does not die for some time. We should do something to restore animation, besides the ordinary traction of the tongue. A surgeon is criminally responsible if he has not a regular apparatus for this purpose, or at least a common pair of bellows. If he has a compressed air tank he can resort to that. He should certainly have oxygen. Forced respiration should be kept up for at least six hours. Life will sometimes come back after six hours when it will not after four or five. If you have nothing better, insert the compressed air tube and push it down into the trachea. You may find it convenient to do tracheotomy. At least 90 per cent. of adenoid growths can be removed without a general anesthetic. When a general anesthetic is needed I use chloroform and nitrous oxid.

Dr. GIBB—In Philadelphia we largely use ether. Our experience with bromid of ethyl has been such as to deter us from its use; but I think the bad results were largely due to the impurity of the drug. The same objection may be offered to nitrous oxid and bromid of ethyl, the short period of anesthesia. This is especially true if the combined operation for adenoids and hypertrophied tonsils is undertaken. There are many adenoids that it is not necessary to remove at all, and still others can be removed by so simple an operation that no anesthetic is needed. But in cases of large adenoid, I still believe that ether is the most desirable form of anesthetic. Nitrous oxid and bromid of ethyl give too short a time.

THE CHAIRMAN—The only way of harmonizing the diversity of views is the natural one of making a proper selection of cases. No fixed line of treatment could be laid down for all cases even to the anesthetic preferred. There are adenoids which can not be removed in one, two or three minutes, and there are those which can, or at least which can be sufficiently removed for practical purposes. There are some cases where it is desirable to make the operation on the faucial tonsils and adenoids at different times, but usually it is best to do a combined operation. Complications may arise, but you would find no general surgeon willing to make two bites of a cherry on so small a surgical measure, especially if the operation be done under a general anesthetic. You can treat hemorrhage just as well in the case of a child under anesthesia as without.

Dr. Menge has taken an extreme position in saying that nitrous oxid with oxygen is absolutely free from danger, for that is true of no anesthetic; it is relatively free from danger. There is also slight asphyxia, even with the oxygen. It is only intended for institution and office use, where the apparatus can be kept in readiness. As to operating without anesthesia, in some children it can be done very well and in others it can not. As to the citation relative to dangerous hemorrhage with an anesthetic, I have elsewhere reported a fatal case from the practice of a friend following tonsillotomy without an anes-

thetic. The child swallowed the blood and the hemorrhage was not observed until too late. If there is hemorrhage you can stop it better with an anesthetic than without. With nitrous oxid the anesthesia is so brief that the patient would have to be re-anesthetized by other means in the emergency of a dangerous hemorrhage.

SOCIETY PROCEEDINGS.

The Quarantine Convention of the South Atlantic and Gulf States.

(*Concluded from page 490.*)

FEBRUARY 11—MORNING SESSION.

The convention was called to order at 10 o'clock and the Chair announced that the order of business would be the discussion of the papers on "National Quarantine" and "A National Bureau of Health" (*vide* JOURNAL, February 26, p. 490).

It was ordered that the discussion of the report of the Committee on Resolutions, when made, be coupled with the discussion of the papers.

The report of the special committee on the resolution introduced by Dr. John B. Hamilton, relative to dangerous infected ports, to provide for the maintenance of a medical force at those ports and the calling of an international quarantine conference, was read. The report favored the adoption of the resolution and the drafting of a memorial to Congress to give it effect, and was unanimously adopted.

NATIONAL QUARANTINE.

The following is an abstract of the paper read on Thursday by Dr. H. B. HORLBECK, health officer of Charleston, S. C., and ex president of the American Public Health Association.

The subject of National quarantine is a function affecting the vital interests of the entire Nation, and it is a task which has its peculiar character, viz., the protection of the different States and municipalities, with the privilege of self-government in those States and municipalities unimperiled.

It would appear that this condition is the pivotal point in the adjudication of National quarantine: To have furnished the fullest and amplest assistance and co-operation by the Nation and to permit intelligent and willing work by the State and municipality. The privilege of our self-control in these matters is the very foundation stone of our civilization, and the abrogation of the power of a municipality to be the final arbiter in her government of her health interest would be the destruction of a right which carries with it the most sacred duties pertaining to a congregation of human beings established under the constitution of the United States. *Salus populi suprema est lex*—The health of the people is supreme law, and should be the most absolute right of every municipality.

We therefore, in adding our modicum to "National quarantine," must above all interests have this sacred right and privilege carefully considered, and we say advisedly "considered." It is not our desire to have these privileges so absolute that an improper or inefficient fulfilment of such duties should not be a matter for adjudication. The rights and privileges of the municipalities being established, we are prepared for discussion of the relation of National influences in these matters.

The governing body who may have the control and guidance of National quarantine should ever be on the alert to have such general laws of quarantine as may be passed and of force carried into effect. We say general laws, and it is idle in addressing so intelligent and well informed a body to designate such laws which affect the general health of all collected bodies of human beings. Such laws should ever be of force, and as we understand the situation such federal laws are now and have been of force since the act of Feb. 15, 1893, and they are now dominant. All communities who are recreant to their sacred rights and privileges, should at once be brought to a realization of their shortcomings by the controllers of the National laws.

As I am a life-long resident in a sea-coast city, it is but natural that I should more particularly address you in reference to the requirements of the quarantine of such a city in its relation to National proceedings. As Charleston is affected by National quarantine, so are affected the cities of the South Atlantic and Gulf coasts of the United States. The diseases incident to one are incident to all, and the proceedings for the protection of health and for the non-injury to commerce are the same.

There is something new in the situation that is the threatened additional powers that are embodied in Senator Caffery's bill, known as Senate Bill No. 2680, additional powers to be given to the Federal Government, practically under the control of the Marine-Hospital Service.

This concise and forcible bill of less than two hundred lines sweeps away all privilege of State or municipality of making any laws as to quarantine, and vests this duty in the nominal hands of the Secretary of the Treasury, as it is a matter of fact that this department of the treasury is under the Supervising Surgeon General of the Marine-Hospital Service. They are simple words, these commencing lines of Senate Bill 2680, but they are ruthless as to any further privilege of the governmental bodies thinking what may be best for the interests of a State containing a seaport city.

The act of Feb. 15, 1893, entitled, "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," is destroyed. In the very initial sentence this bill, No. 2680, condemns all privileges of cities judging for themselves or enacting laws for their procedure, and says of the act of Feb. 15, 1893, that it shall be amended by striking out the following words in Section 1: "And with such rules and regulations of State and municipal health authorities as may be made in pursuance of or consistent with this act."

The rules and regulations deemed wise and efficient, and made at the suggestion of State or municipal boards of health, are swept out of existence, and the Secretary of the Treasury "shall make such rules and regulations as are necessary to prevent the introduction into the United States of any infectious or contagious disease from any foreign port or place, or the spread of such diseases from one domestic port to another," etc., ... "to be enforced by consular quarantine and customs offices of the United States, and the State and local quarantine officers of the United States" . . "with the proviso that they shall not discriminate against any port or place." The laws are to be made by the Secretary of the Treasury and practically carried out under the power of the Supervising Surgeon-General of the National hospital service. Was there ever a law made that was not open to differences of opinion as to its meaning? The State Board of Health of Louisiana were for years trying to enforce their laws as to the collection of dues contracted for quarantine procedures. Is it to be the privilege of the Marine-Hospital Service to take the place of the supreme court of the United States? Who is to adjudicate the proper charges of quarantine procedure, are the same charges to be made in a port of a dozen entries in a year with ports having thousands of vessels entering their harbors, like New York, Boston, Philadelphia or New Orleans? All such matters should surely be in the hands of the ports interested.

On page 3 we find that when the Secretary of the Treasury shall deem it necessary, etc., incoming vessels shall be inspected by a National quarantine officer designated or appointed by the Secretary of the Treasury on recommendation of the Surgeon General of the Marine-Hospital Service, and such vessel can not be admitted to entry without the certificates of said officer that the United States quarantine regulations have been complied with.

The quarantine laws for the great cities of the United States are to be made (practically) by the Marine-Hospital Service, and if not satisfactorily carried out in the opinion of that service, an officer is to be sent, recommended by them, to forbid entry as they see proper. Was ever such power granted? Is it the meaning of this bill that every port must yield to this overwhelming power, and pass over their cities to the Marine-Hospital Service for quarantine government?

On page 6, line 25 says whenever yellow fever, cholera, plague or typhus has passed the quarantines of the United States . . . the quarantine regulations of the United States, prepared under the direction of the Secretary of the Treasury, shall be supreme and have precedence of State or municipal laws, rules or regulations, and the President is authorized to enforce the same."

On page 6, lines 14 and 15, we find, "and to prevent unnecessary restrictions upon interstate commerce." Any person violating a prohibition or a permit from the Federal authorities shall be deemed guilty of misdemeanor and shall be subject to a fine of not more than $1000 or imprisonment for not more than twelve months, or both, at the discretion of the court.

This is the *summum malum*. Therefore, any health officer who shall disregard a permit which he regards dangerous to his community, shall wear stripes in a common prison or penitentiary and pay a fine which may beggar him.

There are two quarantines, one in the interests of health and one in the interests of commerce. The quarantine interests of health and of commerce are ever at variance. It must be so.

The laws governing success in commerce are inexorable. To forbid entrance to or from a city for merchandise means a stagnation which carries with it while it lasts loss to commerce, and so we are able to have this bill to prevent unnecessary restrictions upon interstate commerce. To have the *ipse dixit* or advertisement from any person representing a National service that perfect disinfection has been carried out only should convey with it the fact that it is so stated. The privilege of recognizing whether such procedures are believed to be effective and of avail should belong to the community to whom it is desired to consign such shipment. Are the causes and methods of prevention of yellow fever so well known that we can definitely say this person is harmless, and that package will cause no peril? We believe we can say so with certain procedures thoroughly carried out, but are such procedures possible when the commerce of a great city becomes a factor? We believe not, and with every disposition and inclination to fulfil such requirements we believe the Federal Government has not yet reached a position to perfectly disinfect great train loads of men or merchandise.

We have tried to discuss the bill of Mr. Caffery with all fairness, as it affects National quarantine. We believe it to be a most pernicious bill, wrong in spirit and wrong in letter. The act of Feb. 15, 1893, is, in our opinion, wholly sufficient for our present requirements; it is full as to foreign requirements, and it says as to local procedures:

"Section 3. That the supervising Surgeon-General of the Marine-Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, co-operate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia; and all rules and regulations made by the Secretary of the Treasury shall operate uniformly and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury, necessary to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia, the Secretary of the Treasury shall, if in h s judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the States and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations, the President shall execute and enforce the same and adopt such measures as, in his judgment, shall be necessary to prevent the introduction or spread of such disease, and may detail or appoint officers for that purpose."

We regard the protection of a city against the introduction of disease to be a privilege, a great right and a great duty, and we protest against the assumption of such rights, privileges and duties by any branch of National service. It is our conviction that the State and municipal authorities should be built up, not torn down and made subservient. These health authorities should be encouraged in every way to feel their responsibilities, and should be encouraged to take a quick and lively interest in all matters pertaining to the health of the Republic, and they should be encouraged to feel their responsibilities, and as long as they indicate by their labors that they are striving for the public good they should be given the fullest opportunity of carrying out the health laws as they are understood by competent sanitarians. The duties of the Marine-Hospital Service are now vast enough to satisfy the ambition and desires of any body of men. Under the laws they must co-operate with, not entirely supersede.

Such aid in all great epidemics and emergencies as they may give should be actively, generously and thoroughly bestowed. Such a field, although not limitless, is vast, and in it the Marine-Hospital Service may find ample room for honorable service. We re-echo the sentiment that National quarantine should be co-operative, not autocratic.

The discussion on the papers above referred to was opened by Dr. John B. Hamilton of Chicago, who spoke on the subject of "A National Bureau of Health." He spoke of a bill drafted by the AMERICAN MEDICAL ASSOCIATION relative to the establishment of such a bureau and asked the endorsement of that bill by the convention. He said the bill had been drafted for the benefit of the whole country. He read extracts from the provisions of the proposed bill and explained those provisions. He said he would take naught from the powers of the Marine-Hospital Service, and in the bill providing for a commission of public health it was intended that the Marine-Hospital Service should be the executive arm of the proposed commission. This bill, while giving National authority, provided for full co operation by State authorities.

Hon. JOHN E. GRADY of Appalachicola followed. He said that for a long time he had been of the opinion that all matters of quarantine should be under control of the federal government. He said that those States bordering on the Gulf or Atlantic are not the only ones interested in the matter of quarantine, and spoke of the difficulty of explaining to a Norwegian shipmaster the differences of the quarantine regulations of the various ports, and said that the correction for these differences lies in uniformity of quarantine laws. Such uniformity will put each port on an equal footing.

MAJORITY REPORT—COMMITTEE ON RESOLUTIONS.

Dr. HARALSON of Mississippi then read the following report:

The Committee on Resolutions respectfully recommend the adoption of the following:

Resolved, That the Quarantine Convention of the South Atlantic and Gulf States invite the attention of the Congress of the United States to the Senate Bill No 2680, introduced by the Hon. Mr. Caffery, as not conducive of the sanitary interests of the country. The convention does not regard the bill as necessary or wise. The powers proposed to be conferred upon the Secretary of the Treasury are extreme and dangerous. We therefore respectfully urge that the said bill do not pass.

Resolved, That the Senate Bill No. 3433, a copy of which is transmitted herewith, introduced by the Hon. John C. Spooner, creating a commission of public health prepared by a committee of the AMERICAN MEDICAL ASSOCIATION, endorsed by the American Public Health Association, having the merit of covering the entire sanitary field and providing a uniform system of quarantine of the Federal Government with the co-operation and advice of every State board of health in the Union, would, in the opinion of this convention, be wise and satisfactory. We therefore respectfully urge its passage.

The bill providing for the raising of a commission to study and investigate the disease of yellow fever, and providing for an appropriation and emoluments and expenses of that commission was endorsed by the committee.

The resolution for a conference of the health authorities of the South Atlantic and Gulf States to formulate a code of quarantine rules and regulations and promulgate the same was endorsed by the majority and its adoption recommended.

[Signed]—H. B. Horlbeck, B. Smith, J. L. Ludlow, U. O. B. Wingate, J. L. Horsey, J. M. Holloway, S. A. Robinson, J. F. McShane, A. R. Reynolds, J. C. Egan, H. H. Haralson.

Col. W. E. KAY of Georgia then read a minority report signed by himself and Capt. J. M. Falkner, and moved its substitution for so much of the majority report as refers to the Caffery bill:

MINORITY REPORT OF THE COMMITTEE ON RESOLUTIONS.

Mr. President, we beg to report the following resolution, which we ask to be substituted for the majority report of the Committee on Resolutions:

Resolved, That it is the sense of this convention that the Congress of the United States should immediately enact such legislation as will result in the establishment of a National uniform system of quarantine, relating to the regulation of commerce with foreign nations between the several States, with due regard to the rights of the various States.

Resolved, further, That it is not the purpose of this convention to endorse any plan or criticise any legislation now proposed, but simply to place on record its belief in the necessity for uniformity of such enforcement as is only possible under National supervision, leaving the plan and details to our Representatives in Congress.

[Signed]—W. E. Kay, Georgia; J. M. Falkner, Oklahoma.

Hon. R. H. CLARKE of Mobile then offered the following substitute for both reports:

CLARKE'S SUBSTITUTE.

Resolved, That it is the sense of this convention that Congress should enact laws to provide for an efficient maritime quarantine, to be uniform and impartial in its application to the different commercial ports of this country, so as to give no one or more of them undue commercial advantage over the others, leaving to the States to prescribe and enforce additional reasonable safeguards of the health of their communities, provided that such State action shall not unreasonably obstruct commerce.

2. That Congress should aid the several States in establishing and maintaining uniform reasonable and efficient quarantine laws for regulating interstate commerce, leaving to each State adequate power to protect, as it shall deem best, the lives and health of its people.

3. That Congress should leave exclusively to the States the regulation of their internal commerce, and the provision of such quarantine or sanitary laws and regulations as they may deem advisable to that end.

4. That, in the framing of quarantine laws and regulations, and their enforcement, Congress should avail itself of the learning, experience and ability of the medical profession in the fullest measure possible.

Hon. EDGAR H. FARRAR of New Orleans moved the reports be divided and that the last two resolutions as to the appointment of a commission to investigate yellow fever and as to the conference of the States be taken up first; adopted.

That portion of the report relative to a yellow fever commission was adopted without dissent.

That portion of the report relative to a conference between the South Atlantic and Gulf States, to formulate a code of quarantine regulations, was then placed before the convention.

Dr. M. CUNNINGHAM of Birmingham moved its adoption.

There was some discussion as to the limit to be placed on the debate on the reports of the Committee on Resolutions.

On motion of Mr. JOHN B. KNOX of Anniston, after accepting amendments by Colonel W. E. KAY of Georgia, the leaders of the minority and majority reports and substitute were allowed twenty minutes and all others ten minutes, the debate to close at 3 o'clock.

Asked about the provision for the conference of the States, the chairman declared that it had been adopted.

The question then came up on the substitute offered by Hon. R. H. Clarke. He said the question is whether the convention should condemn the Caffery bill and endorse the Spooner bill. He said he had received an official copy of the Caffery bill and the Senate Committee's report, only one member of whom dissents from the recommendation that the substitute for the Caffery bill pass, and condemning the Spooner bill. He said the convention knew the influence of a committee report and if the majority report is adopted it will virtually say to the Senate Committee "you must reverse your action." We are an advisory body and we should not be too dictatorial, and we ought to avoid putting ourselves in the attitude the adoption of that majority report will place us. The Senate Committee has given more careful attention to those two bills than the members of this convention. He continued his argument against the condemnation of the Caffery bill, and said that he supposed the majority report condemned the original Caffery bill, every word, line and punctuation mark of which after the enacting clause, had been stricken out. The original Caffery bill had been condemned by the Senate Committee.

Professor SHANDS of Oxford, Miss., objected to the reservation of time by the leader of the minority report.

The convention voted that the twenty minutes applied at the beginning of the debate.

Colonel KAY then took the floor in support of the minority report. He inveighed against the acceptance of the Spooner bill as a *sine qua non*, and said that its adoption would wipe out the rights of the States in the matters of local quarantine. He said the provisions for a conference with State boards of health by the commission would be impossible of fulfilment. The vote of the Health officer of Maine, where there was never a case of yellow fever, would have the same weight as the vote of the Health Officer of Louisiana, and the adoption of the Spooner bill would be a very unwise step.

Dr. H. B. HORLBECK of Charleston then took the floor in support of the majority report. He said the Caffery bill was condemned because it is autocratic. The Committee had two bills before it, and carefully considered both the original and the amended bill for three hours. He claimed that it sweeps out the rights of the States to manage their own quarantines. It sweeps out the last atom of power that any State may have, and gives the Federal Government absolute control and says the law shall be supreme, and those who do not obey its mandates shall be amenable to a fine. Can a gentleman sitting in Washington manage our quarantines. If I thought the Spooner bill had any such conditions I would vote against it right here on this floor. I am a health officer and my duty is to protect life, and I have nothing to do with commerce. The lives of the people are paramount to business. He characterized the Caffery bill as iniquitous. He endorsed the Spooner bill as earnestly as he condemned the Caffery bill, and discussed the provisions of that bill at length.

Dr. SANDERS moved that Nos. 32 and 33 be the special order for the evening session; adopted. These numbers are: "Epidemics and Quarantine from a Religious Standpoint," by Rev. H. C. SEMPLE of New Orleans, and "Epidemics and Quarantine from the Ethical and Humane Points of View," by Rev. GEORGE B. EAGER, D.D., of Montgomery.

After a discussion, participated in by Dr. Waldauer of Mississippi, Dr. Kohnke of New Orleans, Edgar H. Farrar of New Orleans, John B. Knox of Alabama, the resolution was passed under a suspension of the rules.

The discussion on the report of the Resolutions Committee was resumed, and Hon. E. L. Russell took the floor in support of Mr. Clarke's substitute.

Hon. F. C. ZACHARIE of New Orleans offered an amendment to the first section of Mr. Clarke's substitute, for the purpose of making it clearer, the amendment not altering the sense of the section. He then advocated the adoption of the substitute of Mr. Clarke, and at the conclusion of his remarks the convention took a recess.

AFTERNOON SESSION.

Hon. R. H. CLARKE's amended substitute adopted.

Mr. NORMAN WALKER of New Orleans introduced a resolution providing for the holding of the proposed quarantine conference provided for by the convention at Atlanta, in the week beginning April 25. An amendment fixing the date the first Tuesday in April was accepted by the mover. The motion was then adopted.

Hon. R. H. CLARKE then asked leave to withdraw his substitute and to substitute therefor another substitute. This request was adopted by the convention.

Colonel KAY then withdrew the minority report.

Dr. HORLBECK withdrew the majority report and moved the substitute be adopted; carried amid applause.

The amended substitute is as follows:

Resolved, That it is the sense of this convention:

1. That Congress be requested to provide for a department of public health as soon as practicable.

2. That it is the sense of this convention that Congress should enact laws to provide for an efficient maritime quarantine, to be uniform and impartial in its application to the different commercial ports of this country, so as to give no one or more of them undue commercial advantage over the others, and to be enforced by the several State and municipal quarantine or health boards, if they will undertake so to do, leaving also to the States the power to prescribe and enforce additional reasonable safeguards of the health of their communities, provided that such State action shall not unreasonably obstruct commerce.

3. That Congress should aid the several States in establishing and maintaining uniform, reasonable and efficient quarantine laws for affecting, but not regulating interstate commerce, leaving to each State adequate power to protect as it shall deem best the lives and health of its people.

4. That Congress should leave exclusively to the States the regulation of their purely internal commerce and the provision of such quarantine and sanitary laws and regulations as they may deem advisable to that end.

5. That in the framing of quarantine laws and regulations and in their enforcement Congress should avail itself of the learning, experience and ability of the medical profession in the fullest measure possible, and especially by way of an advisory council.

Dr. KOHNKE of New Orleans offered a preamble and resolutions as to popular education in hygiene, endorsing the purposes of the Louisiana State Sanitary Association, and recommending the establishment of similar sanitary associations, was adopted by the convention.

Mr. R. J. LOWE objected to the resolution and made the point of order that the resolution should go to the committee, but was overruled.

Dr. S. R. OLIPHANT, ex-president of the State Board of Health of Louisiana, then read a paper on

SANITARY INSPECTORS OF FOREIGN PORTS; WHAT IS BEING DONE AND WHAT CAN BE DONE IN THIS DIRECTION.

The Doctor outlined the use of inspectors in fruit ports and in other foreign ports on the lookout for cholera, yellow fever and other infectious or contagious diseases. He outlined the

duties of the inspectors in his opinion and said they should deal in facts first and in opinions afterward. He said the quarantine officer should never pass through his lines a shipment he would not receive in his own city. He spoke of the great benefits that had already accrued by reason of a system of medical inspectors.

Mr. ZACHARIE moved that copies of the resolutions adopted by this convention be forwarded to Congress, which was adopted.

A collection was taken up to defray the incidental expenses of sending out circulars and the chair guaranteed to raise by subscription the amount necessary to print the proceedings of the convention, amounting to $63.35.

Hon. D. M. TAYLOR of Mississippi offered a resolution that each of the Spanish-American countries be invited to send one delegate to Atlanta, with a view of having a co-operative international quarantine system; adopted.

Dr. H. H. HARALSON of Biloxi then read a paper on "Medical Inspectors of Coast Towns and Cities, How Best to Provide For."

The Chair appointed the following Committee of Arrangements for the Atlanta convention: Collier of Georgia, Moody of Alabama, Renshaw of Florida, Horlbeck of South Carolina, Ludlow of North Carolina, Smith of Texas, Formento of Louisiana, Griffin of Mississippi. On Publication: Dr. Moody, Hon. Leslie E. Brooks and Erwin Chaighead of Mobile.

Dr. P. E. ARCHINARD of New Orleans then read a paper on "Recent Discovery of a Method of Early Diagnosis of Yellow Fever."

Dr. QUITMAN KOHNKE of New Orleans then read a paper on "What Steps Should be Taken in Dealing with First Case or Cases of Infectious or Contagious Diseases that May Reach our Towns or Cities."

Dr. FELIX FORMENTO of New Orleans then read

THE POLICY OF DEPOPULATING CITIES INFECTED WITH YELLOW FEVER; IF UNDERTAKEN, HOW BEST TO ACCOMPLISH.

He said: *A priori* and on general principles, we would probably all be inclined to admit that the early depopulating of infected cities, if practicable, would be the best and most efficient means of stamping out an epidemic disease at its very birth, by removing the elements necessary to its development. A fire without fuel will soon die out, the disease would soon come to an end for want of subjects. But is such a policy possible? Can it be carried out? Even with the good will and active co-operation of all the citizens of a town or village, is such a general exodus practicable? How and where could we find the physical means, the financial resources necessary, indispensable for the carrying out of such a measure? Who would furnish both the means of escape and of subsistence to thousands of families, and for an indefinite period?

As to a compulsory depopulating, to a forced exodus, even in the smallest of our communities, such a course is not to be thought of, is absolutely impossible in a free country like ours. No authority on earth would have the power, still less the right, to enforce it. The population of the smallest and most insignificant hamlet has natural rights and privileges, which can not be interfered with. In this question, the presence of yellow fever is not the only factor to be considered. The innumerable and varied family, social and commercial interests of modern life can not be overlooked, sacrificed to fear, justifiable or not, of a disease, however dreadful it may be; their ruin would be more of a calamity than the disease itself. I can not here abstain from protesting in the strongest terms against the shameful and humiliating measures inspired by terror and panic which have been witnessed all around us during the last epidemic. These measures of self-protection were as worthless and unscientific as they were cruel and tyrannic. Remnants of the practices of the dark ages, they are unworthy of our age and civilization. I never could understand why our people, so brave, so reckless and indifferent to danger, ready to take all sorts of risks by land and water, should become so timid, so frightened, so demoralized in the presence of a few cases of yellow fever. That disease has the privilege of inspiring more terror than any other, many times more terrible and fatal. This sentiment of fear is degrading and a worse evil than the disease itself, as it tends to lower the moral sense of a whole people.

This terror is entirely unjustifiable. In fact, yellow fever has lost much of its violence since 1853. That year the death rate was enormous, 3 out of 4! In 1878, it was 1 in 5; in 1867 it was 1 in 20, and in 1897 it was about 1 in 200.

General depopulating of a city or town, however desirable from a theoretic point of view, is, I repeat, of impossible realization. It never could apply to a large city. Voluntary exodus, which implies the necessary means to accomplish it, of individuals and families should greatly be encouraged, especially at the very breaking out of the disease. This depopulating is generally done at once, spontaneously, without waiting for the direction or control of health authorities.

During the existence of an epidemic no persons should be allowed to leave the infected locality for a healthy one, without taking proper sanitary precautions. These consist principally in permitting no baggage, but only scant wearing apparel, and in the thorough washing and disinfecting of the person himself.

Refugees should be brought to a camp of observation established in a convenient and healthy locality on the railroad outside of all contamination; there they would remain during the period of incubation; then a traip from the town willing to receive them, and carrying clean, disinfected clothing, etc., would come to convey them to their destination. We could cite several instances in which, under similar precautions, the transfer was effected without any bad results.

There is a method of depopulating which is, perhaps, more productive of good than that of towns and villages. We refer to the early depopulating of the houses in which occur the very first cases of fever. This method applies to all infectious diseases and is the one followed in Germany for the immediate stamping-out of scarlet fever, typhus fever and other infectious diseases. To carry out successfully this plan, all necessary precautions should be taken in advance and be always in readiness, especially in those cities most exposed to infection. Special hospitals for the treatment of yellow fever, established in the outskirts of the town, should at all times be ready for the reception of patients, and camps of observation and isolation, one of the best measures instituted during the recent visitation, should also be fully prepared in advance. On the occurrence of the very first cases the sick should be removed to the hospital, and the well, living in the infected house, at once removed to the camp, and the house thoroughly disinfected. This is particularly urgent in crowded tenement houses and densely populated quarters.

EVENING SESSION.

Rev. GEORGE B. EAGER, D.D., of Montgomery, read a paper on

EPIDEMICS AND QUARANTINE FROM THE ETHICAL AND HUMANE POINTS OF VIEW.

He said: This question of quarantine has its distinctly legal and commercial aspect, which none of us would minimize, and which business men are naturally inclined to think the all-important ones. It has also its international, National and State aspects, and then its sociologic, scientific and sanitary aspects.

Quarantine in our own country is conceded to be very complex, ineffectual and defective. We have had ample illustrations of this fact within late years. Under its operations and abuses we have been called to witness the most humiliating atavistic tendencies of human nature and society. Poor human nature has shown in many cases a most shocking reversion to type. In one way and another our people have been guilty of the most barbarous cruelties. These cruelties have been shown especially in the enforcement of defective, various and unscientific local systems of quarantine that exist in our Gulf States.

With human nature what it is, and society as it is, crude and undeveloped in many of its elements, with much of our civilization proving itself, under stress of fear and selfishness, but a veneering, certain excesses of tyrannies will crop out. There are evils that are incurable at the present stage of our development. "What can not be cured, of course must be endured." But are there not many of the inconsistencies and inhumanities of the existing quarantine system that might be remedied? If so, all principles of justice, right and humanity call on us to address ourselves to this problem with all earnestness and unselfishness.

Admitting all that can justly be said on municipal and State rights and on the legal aspects of quarantine, one fact stands out, the recent conduct of quarantine affairs by local authorities was a scandal and a disgrace to civilization! The dread name of the disease alone seemed sufficient to terrorize the majority of our people and lead to the most brutal encroachment on inherent human rights, to the violation of nearly every law of the decalogue and to unreasonable and inhuman interferences with travel, transportation and trade. As a result of this contagious demoralization, not only was business absolutely paralyzed, but the States of Alabama, Mississippi, Louisiana and Texas, as we all know were almost wholly given over to terror and anarchy, masquerading under the name of "local" quarantine.

Let it be granted that the function of quarantine has to do with health matters, that it is the protection of the public from

an invading disease, that this is primarily the duty of the State; my contention is that all considerations of humanity require that its enforcement should be as free from complications, delays and harsh exactions as is compatible with efficiency, and that the expense to commerce should be reduced to a minimum. That a pest-ship, for instance, should be obliged to go out of its course a hundred miles or more to be disinfected, is a sufficient evil in itself; but that the sick, often without medical care, and the well, in constant danger of infection, should be penned up in the same vessel, perhaps for several days, is barbarous.

A system of quarantine that is just and humane, at the same time that it is efficient, should not only remove the sick to a hospital, but should provide means for comfortably caring for the well who have been exposed to infection, and should possess the necessary authority, force and apparatus for the speedy disinfection of vessels, baggage, merchandise and clothing.

In conclusion, if the abuses and cruelties and excesses complained of and all ideas can be checked, or in any degree cured, by the establishment of an improved and well adjusted National quarantine system, or by an enlargement of the scope, force and equipment of the Marine Hospital Service, then all principles of justice and humanity require that we should subordinate our local preferences, our too narrow or sentimental ideas of State rights, and our personal ambitions for position or greed for revenue, to the greater interests of the greater number.

Dr. CHARLES A. MOHR of Mobile then read a paper on "Agents and Methods of Disinfecting Houses, Cars, Freights, Baggage, etc., and the Classification of Freights as to their Liability of Conveying Infection." Dr. James M. Holloway of Louisville, on "To What Places may Refugees from Localities Infected with Yellow Fever Go, and how Should they be Managed and Cared For." Dr. Warren E. Anderson of Pensacola, a paper on "Quarantinable Diseases—What they Are and How they should be Dealt With." Dr. George A. Ketchum of Mobile, on "What may be done to Check the Spread of and to Exterminate Yellow Fever after it has Become Prevalent in a City." Surgeon R. D. Murray submitted a paper without reading on "Camps of Refuge and Detention." Dr. Maxime Landry of New Orleans, read a paper on "The Experiences of a Quarantine Officer in the Recent Epidemic."

Dr. SANDERS rose to a question of personal privilege and took occasion to vehemently deny the charge of making an effort to pack this convention with men against National quarantine. He said he sent the paper that originated the charge a 200-word telegram and a letter, which if they had been published would have swept away the charge. Another was the intimation that he had selected a large number of lawyers all on the same side of the question, which he denied, saying that he was entirely ignorant of what side any lawyer would take until he heard them address the convention. He said he appreciated the resolution adopted thanking him for his efforts in getting up the convention, but he feels under no obligations to the presiding officer for courtesies extended during the convention, as he had disassociated him from any part in shaping the policy of the convention.

The convention then adjourned *sine die*.

New Jersey State Sanitary Association.

(*Continued from page 493.*)

On Saturday the chief paper was

PASSAIC VALLEY DRAINAGE,

by W. T. HUNT of Newark, a son of the late secretary of the State Board of Health. The Passaic Valley has long been a source of trouble owing to the great need of some means of drainage for the number of towns which occupy its fertile plains. Many of these are large and important. All have long been urging some relief for the great foulness of the river owing to the escape into it of the sewage of these places, not only destroying the value of the water for drinking, but in many instances causing disease by the foul odors given off in its course. Hence after many efforts the legislature, in 1896, appointed a commission to consider the subject of its pollution and of a general system of sewage-disposal for its relief. Ten thousand dollars were appropriated for the purpose. The report of the Commission is one of great value, well prepared with maps and charts to show the true condition and the plans proposed for its improvement. Mr. Hunt was one of the Commissioners. He said: Passaic Valley sewerage is distinctively a sanitary measure and commands the attention chiefly upon that basis. It is, however, complicated in its engineering, its financial and legal aspects, and it is embarrassed by the diversity of interests effected, the antagonisms all such general measures arouse, and the imperfect knowledge with which the subject must be approached. But when it has been established that this is a sanitary necessity the greatest step has been taken. For through the association of men such as constitute this body, through the individual labors of physician and engineer, and through the wise acceptance of new truths by courts and legislators, it has come to be recognized that sanitation has rights which give it precedence, and that the power which restrains crime and prevents contagion may also be asserted for public works which are necessary to health. If we may isolate the smallpox patient, we may also demand that a source of disease shall be removed; and the time is not distant when the public right to compel the private party to connect his house with a sewer will be followed by measures to require that communities should protect themselves by adequate sewerage systems. The right of self-destruction is no longer respected. The status of the movements for the relief of the polluted Passaic may be briefly mentioned. The commission reported to the legislature in February last, the Governor recommended prompt consideration and a joint committee was appointed to report upon the advisability of legislation at the next session. This committee has begun holding sessions in the cities interested, beginning with Bayonne. Let us look at the problem. The Passaic River becomes the Lower Passaic by going over a precipice at Paterson into the thickly settled district of a city of 100,000 people; its rapid flow is checked after a couple of miles by a dam at the city of Passaic where the sewage of 18,000 people is received: thence it is a tidal river receiving the sewage of Newark with 230,000 inhabitants, besides contributions from partially sewered towns in the distance between. In this drainage district there was a population of 436,423 in 1895, and the growth has since been rapid and gives every indication of continuing at a high ratio, since the facilities of travel have been largely increased. The estimate of the engineers of the Commission was that the population would be 1,458,000 in 1930, and those who have seen the strides made in the last five years will not challenge the figures. Now the Passaic has heretofore taken care of the sewage of this district more by absorption than by the weight and power of its seaward flow. The sewage of Paterson may almost be said not to have below Dundee dam at Passaic, the long stretch of sluggish stream at Dundee lake above the dam precipitating the solids by the mechanical process so generally used. From Passaic down the tide ebbs and flows, the volume of course depending upon the rainfall, but not developing into a continuous current at any time. We have not, therefore, a river which will carry away the deposit of sewage so as to scour its own banks and bottom. Its self purification, in short, depends chiefly upon there being sufficient dilution, and when the extreme limit of the water's absorbing capacity is reached we have a condition which is not so much that of an open sewer as of a cesspool. That the limit has been reached was demonstrated by the dry summer of 1895, and in that year, and at intervals during 1896 and 1897, when the rainfalls were interrupted, the recurrence of the cesspool features of the river was so immediate and so obvious that there could be no questioning the thorough establishment of the fact that the river has become incapable of assimilating additional sewage in its ordinary flow. The consequences are as inevitable as death.

Now, if we are right in assuming that the violation of the laws of health is something which must be checked as we would prevent crime or contagion, and that the Passaic river is an offence which imperils life and property, it seems obvious that creators of such condition should provide the means of removing it and that those who would share the benefit of the remedy should also share in the provision of it. The drainage district has heretofore carried its sewage to the river as a place of final deposit; that place having become dangerous, it is demanded that the rule which removes the cesspool from the city lot should apply to the cesspool which has been created by using the river as a place of sewage deposit. In planning to relieve the river, it was ascertained by the Commission that an arterial sewerage system extending from the Paterson Falls to Newark Bay, which would probably cost $6,500,000 and have a length of nearly twenty-six miles, would accommodate the sewage flow of the population of the cities and towns of that drainage district. It was the compactness of the population which primarily led to the decision in favor of an arterial system. The collection, at one point, of the sewage of the towns and cities of the district was found to be necessary and it was believed that one great interceptor should perform the work for the whole district rather than that there should be several such to collect for parts of this concrete section. The decision was made less difficult by the failure to discover localities fitted for disposal of the sewage of Paterson and Passaic, and by the obstacles which would be encountered in using any place for such a purpose in a thickly settled district. The commission

ers were driven toward an arterial system, with eventual sea disposal below the populated places in the drainage district, and that simplified their work.

Now as to the final disposal. We have a community of half a million souls dependent upon the open river for an outlet for their sewage, and find the river overburdened, depositing its solids as it sluggishly makes its way to the sea, and sending on the contaminated waters to reach the ocean before restored to their pristine purity. We propose the collection of the sewage into a sewer which will relieve the river of its foulness, and we point out that a large part of the work contemplated is a pressing necessity through the absence of local interceptors. We reach the salt meadows between Newark and Elizabeth, opposite Newark Bay, and there the collection work for the Passaic river proper may be said to end. The discharge as recommended by our engineers is to be made into Newark Bay. The engineers suggest a flume a mile and nine-tenths in length, extending from the interceptor's terminus in Newark Bay at Great Island to a point in the bay at deep water. There the discharge is proposed to be made, under such conditions as subsequent developments and investigations may make advisable. Should a nuisance be created there a further extension of the sewer to a point on the lower Bay of New York is recommended by the engineers, but it is believed by them that such danger would be small. We are, however, met by opposition to the discharge at this point from places located on the bay and below it, and from various sources. It has been claimed that the prospective contamination of the Bay only transfers the nuisance to a point lower down the river and that large interests would be injuriously affected. I am not prepared to enter just now into a full defense of this, but I do assert that so far as concerns the collection of the Passaic River drainage district and its conduct to the point indicated, it is a demonstrated necessity, and that the further disposition can be made at no other point so well. It may be further asserted that the practicability of discharging at outgoing tides; of precipitation previous to any discharge; and of the development of still newer methods of treatment before finally releasing the fluids for sea disposal, offers recourses sufficient to meet the objections that have thus far been raised. Should a further extension of the sewer to the larger bodies of water in New York Bay be required, there are other districts which would find the route the best available for them, and thus the cost of extension would be somewhat reduced. It should be mentioned that the island in the salt meadows, indicated in the report as the place of final collection, is comparatively remote from population, and is surrounded by marshes which would prove a barrier to growth in that direction.

It is also to be noted that a sewerage system for South Orange, which will eventually include other places, fixes the place of deposit at the outlet which the engineers of the Commission designated for the main sewer. It is then established that for the lower Passaic sewerage district it is necessary to construct an arterial or trunk-sewer collecting the sewage of the district from the cities and towns now having sewer systems or soon to construct them, and that such trunk system should end for the present at Newark Bay. This is found not only by affirmative fact but by the absence of interceptors in the cities, by the absence of suitable disposal grounds available near the cities and by the objections raised by large suburban population occupying territory which might be made available, as well as by the necessity of providing an outlet for the fluids after disposal and by the superior facilities of the meadows opposite Newark Bay for collecting purposes. Let the final discharge be into lower New York Bay or Newark Bay, and the necessity of conveying sewage to the point indicated remains unassailable. And for the capacity of Newark Bay to receive and dispose of the estimated flow of 70,000,000 gallons daily we have the estimates of our engineers. The desirability of using mechanical precipitation before such discharge has been carefully considered, and the convenience of access for boats to convey the sludge to sea if necessary, is a further advantage of the locality. The difficulties of land disposal in those sections have led to movements favorable to a great extension of the arterial systems.

There are parts of five counties and eighteen or twenty cities, towns and hamlets in the lower Passaic sewerage district. Each has its own interests, purposes and municipal ambitions, and each has much to do and little money to spend. The work is necessarily of a State nature, requiring a broader and higher authority than that granted any of the local branches of government. On the other hand, the constitution of the State denies to the legislature the authority to provide for the payment of such a costly undertaking by the necessary issue of bonds. It is required, therefore, that substantially a new method of exercising the powers of the government should be devised and to warrant such an innovation the necessity should be great. The imperative nature of the demand for the abatement of the Passaic nuisance has been demonstrated elsewhere, and the duty of the State to take action depends upon whether it be agreed by such students of sanitation as are now before us, that an injury to public health must be repaired not merely as a matter of policy but as a duty of government, similar to that of the prevention of crime and its punishment. Upon no other basis should we be willing to advocate measures which the limitations of constitution and existing forms of local government thrust upon the State for the correction of this and similar nuisances. The proposed law would briefly define that when a commission which has been duly appointed to consider the subject reports that any stream has been so befouled by sewage as to become a public nuisance and detrimental to health, the governor may appoint three able and discreet men with power to remedy the nuisance at once. The initiative is in the legislature so far as the preliminary examination is concerned. The governor acts, the commission proceeds with its task. It requires the selection of competent men and gives them very great powers in the raising and spending of money. The local authorities pay for the expense, but do not supervise the expenditures. The three commissioners are State officers, charged with a heavy responsibility, subject only to removal by the governor and to his scrutiny of their accounts. It is an exercise of power absolute, beyond the ordinary, and to which objection might justly be made if it were not founded upon that doctrine that sanitation is a higher law than that which controls the ordinary exercise of government in this State and country and justifies more pronounced measures.

It is the design of the statute as proposed, to meet other needs of the same kind in other parts of the State, and these may be expected in time. The sewerage problem is everywhere, in the remote farmhouse where the well may adjoin the cesspool and the dairy which supplies the city milk may be tainted; in the suburban community desirous of city improvement at a rural rate of expense; in the city struggling to make its sewerage system equal the needs of its rapid growth and requirements of health, on and up to the questions which are involving the collection of sewage from the different municipalities of some great drainage district where the means of local disposal are not available. In our State it compels attention by the evils resulting from its neglect, and we deem ourselves fortunate that the costly problem is pressed upon the State for a solution. These difficulties we find are being encountered all over the country, in other States: In Massachusetts, where action of momentous value has been taken; in Connecticut, where it is now under investigation—wherever there are great cities, narrow rivers being polluted, and an intelligent body of sanitarians to attack the evil. We find it in London, Manchester, Glasgow, countless centers of population grappling with it and guessing their way. There is no established rule, and no all wise sanitarian or engineer. Shall we follow the processes of nature? We find her too prodigal for our small means. Shall we imitate older civilizations? Our conditions are different, and our changes more rapid. We must work out our own salvation as best we may. This should be done by educating the masses through organizations like this. It must ever be borne in mind that there is never a complete and final solution of all difficulty, and crowded communities must be taught that the cost of removing the refuse of the cities bears a large ratio to the cost of supplying such communities. What goes into a community must emerge in some form, and if the transformation reduces it in bulk, it has also made it more difficult to care for safely and healthfully. Kindly critics often referred the Commission to similar problems abroad, and found much to instruct therein, but the work of London, Berlin, etc., is at its best only progressive and as far from perfect as any other branch of human progress. The tax-payers here naturally fear the great increase in the cost of living, but the sound bodies and clear heads which have through invention lightened labor, and so vastly increased the earnings of humanity, may be considered more than an offset for the requirements of the modern sanitation, which not only reduces the death rate but adds to the comfort and efficiency of the living. The Lower Passaic River runs its slow course through one of the fairest valleys in America with a population which it owes to its advantages for residential purposes, and its nearness to the great metropolis. Under healthful conditions the limit of the growth of population can scarcely be defined. Without sanitary provisions, it would be doomed. Education has not merely taught the people to correct bad conditions; it has warned them what to avoid. If the Lower Passaic River has become a nuisance to the public by contamination from sewerage, instead of the attractive and useful stream it was a few years ago, then it

must be restored by removal of the wrong. A river which yields stenches which in the heated air of August sicken many and alarm all; from which the pollution has driven fish life; which has lost its charm as a public resort and the best of our parks; which is driving away population; which, in short, is assuming the conditions of a nuisance instead of a benefaction, compels remedial action. The legislature should act at once, and in time to prevent further injury to the large property interests involved. We can not trifle with such perils, we must regard the interests of the whole body of the people as superior to those of any individual or single community. The influence of this Sanitary Association will aid the project, not only for what would be accomplished for the Lower Passaic valley, but for the principles in government for the benefit of sanitation which a work of such a character would establish and perpetuate in our State.

(To be continued.)

SELECTIONS.

A Case of Tyrotoxicon Poisoning; the Bacteriology of Milk.—At Halifax, England, a case of ptomain poisoning, with a coroner's inquest, has occurred. It is commented upon as follows in the London *Lancet:* "Some interest attaches to an inquest recently held at Halifax on the body of a child, aged 4 years, who was put to bed on November 27, apparently in her usual health, but was taken ill about 7 o'clock the following morning and died in a few hours. A postmortem examination was made by the medical officer, who deposed that death was due to some poisoning the exact nature of which he was unable to specify. It was suggested that the girl might have sucked the coloring from a doll which she took to bed with her, but it was also further mentioned that she had partaken of some ice-cream which might have caused the symptoms. The coroner directed the borough analyst to make an analysis, and he expressed the opinion that the symptoms and postmortem examination pointed to poisoning by tyrotoxicon, a substance derived from unwholesome milk. He examined the ice-cream for tyrotoxicon but found none present. He gave some useful hints, however, that duly found their way into the press, namely, that this substance was destroyed by a temperature of 90 degrees C., and consequently if milk was boiled, should tyrotoxicon be present it would be destroyed. This adds another warning to the community at large against drinking milk that has not been boiled, and points the necessity that farmers and milk dealers should scald out the utensils in which they place milk."

We are reminded by the foregoing of a discussion of the milk supply question that recently took place in the Massachusetts Association of Boards of Health, in the course of which one of the speakers stated that in some places in Boston the milk storekeepers put rotten eggs, cheese, bad molasses and other refuse in the cans to be returned to the dairy. The practice of returning unclean cans and stoppers from the dealer to the producer was condemned. Before so returning them, the dealer should be required to see that they are thoroughly cleansed and sterilized by the use of steam or boiling water. "Inasmuch as milk is one of the best culture media for micro-organisms, and is always liable to become infected with the germs of disease, and further, inasmuch as the process of Pasteurization is known to destroy such organisms, it is recommended by a majority of the committee that, as far as possible, all milk be Pasteurized before it is sold."

In the course of this same discussion Dr. Sedgwick, the well-known bacteriologist of the Massachusetts State Board of Health, remarked that as for himself he now never drank a glass of raw milk. He advocates not only that all milk should be Pasteurized but that this should be done early. He said: "If you go and buy some milk that already has millions of bacteria in it, and a lot of dirt and all that, and Pasteurize that milk, you will undoubtedly have rather a hard time. Milk ought to be Pasteurized at the latest very soon after it is drawn from the cow, and then it would be much cleaner and better taken care of, and when it is treated in that way it is almost perfect. I really believe the time is coming when it will be regarded as *a very unusual and uncivilized thing to drink unpasteurized milk;* and I think, if I had brought in some Pasteurized milk and passed it around here, and said nothing about it, nine out of ten of those present would not have known but they were drinking ordinary sweet milk, that is, most people, having had no sweet milk in their lives, have got used to a commercially sweet milk, and when they get hold of sweet milk they think something is the matter with it. But anybody who has ever squirted milk into his mouth from the teat of a cow, as all boys have done who live in the country, knows that milk that has been Pasteurized tastes like that he used to get when he was a boy, practically normal milk. I believe in cities especially we have got to come to that sort of thing; and I believe that unless we do come to that, we shall see cholera infantum and epidemics of typhoid from milk. I really believe *if we could get Pasteurized milk into Boston today, and let nothing else go into the tenement-house districts, the number of cases of cholera infantum we should have would be too trifling to mention.* And the moral of all this is that boards of health will not be considered to have done their full duty in respect of the protection of the milk supply if they stop short at their usual chemic analysis.

"I believe that the time will come when every well regulated local board of health will have some one at its laboratory, I mean in every city of any size or large towns, who should make an examination of milk that is sold, not only in respect to the amount of water that it contains, that being probably the least damaging of all things, but in respect to dirt and its age or staleness, and that in such examinations counting the numbers of bacteria and determining the acidity will be of very great value." The remarks of Mr. Nathan Straus, the newly appointed president of the New York City Board of Health, may be put on record in this connection. He says: "There is practically no milk delivered for general consumption in cities that is fit to be fed in its natural state to young children. I think I have fairly demonstrated the proposition that many thousands of infants' lives are annually sacrificed by the neglect to supply for the nutriment of children milk which has been sterilized. I hold that neglect to be criminal." The ice has been broken. We may expect soon to hear that the multitudinous institutions throughout the country for the care of children, have found their account in the abandonment of raw or unpasteurized milk, unless it have the certificate of a bacteriologist.

Thyroid Medication in Diabetes.—The principal feature of thyroid medication is the acceleration of tissue nutrition with the habitual predominance of denutrition. To this is due its effect on obesity. It is accompanied occasionally by a slight glycosuria, amounting in Ewald's case to permanent diabetes. In Georgiewsky's experiments with dogs this glycosuria did not appear when the thyroid was administered in combination with a meat diet, but only when the dogs were fed with soups. He also states the fact that the days when there was sugar in the urine there were less unoxidated substances than on other days, showing that the glycosuria can not be attributed to any lack of oxidating energy. Von Noorden asserts that the internal secretion of the thyroid prevents the formation of fat at the expense of the sugar; in other words, it interferes with one of the mechanisms that regulate the glycohemia, which ingenious hypothesis deserves to be verified. This fact that thyroid medication and hyperthyroidization favor the production of glycosuria renders especially remarkable the case reported by Branthomme of an arthritic diabetic improved by the ingestion of thyroid tablets, until now, a year later, there is no sugar in the urine, and merely traces of albumin. Lépine comments upon this case, remarking that if diabetes results from deficient nutrition, then thyroid medication accelerating tissue nutrition would affect it favorably, similarly to the beneficial effect attained in diabetes by d'Arsonval and Charrin with high frequency currents. De Renzi and Reale, on the other hand, have noted glycosuria follow the use of these currents, showing again the analogy between them and thyroid medication. Both accelerate tissue nutrition and thus might improve a diabetic, but more frequently they are injurious, as they stimulate denutrition to such an extent. Lepine concludes by reporting the case of an obese diabetic he is treating with the thyroid medication. At first the sugar was increased, but in a few days it began to show a constant decrease. Intercurrent erysipelas interrupted the treatment, which he intends to resume later.—*Semaine Méd.*, December 22.

PRACTICAL NOTES.

Injections of Artificial Serum for feeble new-born infants have been found remarkably beneficial by Loviot.—*Presse Méd.*, January 22.

Powder for Varicose Ulcers of the Leg.—Finely pulverized sodium chlorid, 50 grams; pulverized menthol, 5 grams. Mix and pulverize (Simonelli, *Journ. de Med. de P.*, January 9).

For Stings of Insects.—Jacquet proposes the following: Naphthol 10 parts; menthol 1 part; ether q.s; petrolatum, q.s. to make 100 parts. Dissolve the naphthol in ether, add the menthol and finally incorporate the solution with the petrolatum.—*N. O. Med. and Surg. Jour.*

An Ointment for Pruritus.—The *Jour. de Med. de Paris* attributes the following formula to Coover: Yellow oxid of mercury, 1 part; vaselin, 200 parts. The ointment should be applied at bedtime, and also, if necessary, in the morning, by firm and prolonged friction, the affected parts having been previously washed with warm water and soap.

The Lithotomy Position in Partu.—O. Schmidt of Moscow recommends this position whenever the head is engaged in the pelvic cavity or outlet; as the labor pain ceases the feet are replaced on the bed. The increased intra-abdominal pressure and the enlarged pelvic outlet render the birth easier in this position, and it proceeds with remarkable rapidity.—*Cbl. f. Gyn.*, 1897, No. 47.

Gravity of Generalized Pruritus in Pregnancy.—Whenever there is general pruritus sufficient to cause insomnia, the subject is evidently affected with a serious auto-infection. In every case observed by Pinard and Lutaud the pregnancy was not normal; either the fetus died or there was eclampsia, or defective insertion of the placenta. The combination of bromid and chloral seems the best medication, although the immediate termination of the pregnancy has been suggested.—*Journ. de Méd. de P.*, January 16.

Girdle for Sea Sickness.—Galliano of Turin is now patenting a compressing girdle or belt which he claims has absolutely prevented sea sickness even in those most easily affected. It exerts a strong pressure on the gastric region from both front and rear, which has long been known to have a favorable effect in threatening sea sickness, although no special appliance for the purpose has ever been devised before.—*Gaz. d. Osp. e d. Clin.*, January 23.

Orthoform Anesthesia.—Orthoform does not produce anesthesia on sound skin or mucosa, only on open wounds. Hirschbruck recommends the injection of a 3 per cent. mixture of orthoform and water, with which he has obtained excellent results. He precedes it with 0.002 cocain mur. to prevent pain from the injection. The anesthesia thus produced is lasting and the absolute non-toxicity of orthoform adapts it to many of the minor operations.—*Berl. klin. Woch.*, 1897, No. 49.

Molteni's Method of Treating Spina Bifida.—After incision parallel to the axis of the spine, and isolation of the sac, a small quantity of the liquid is evacuated and the tiny hole closed with hemostatic forceps, twisted a little to form a small pedicle below them. This pedicle is then ligated with catgut; the part between the ligature and the forceps resected, and a small compressing bandage applied. The next day the operation is repeated exactly the same, on the opposite side of the sac, avoiding the nerve elements, and so on gradually until scarcely anything is left of the sac, which is finally reduced at last, unless this has occurred spontaneously. The whole is concluded with a Senenko osteoplastic operation, and suture in three planes.—*Gaz. degli Osp. e d. Clin.*, January 23.

Citric Acid in the Prophylaxis of Whooping Cough.—Moncorvo Filho of Rio Janeiro states that the special bacillus of pertussis is destroyed in its chosen home, the larynx, by swabbing the periglottic region with a 10 per cent. solution of citric acid, with simple syrup. It also constitutes an effective prophylaxis against infection. He succeeded in preventing the disease in many children living with others infected, by this means, or merely the administration of small quantities of citric lemonade during the day. He considers resorcin and asaprol the most effective of other remedies.—*Brazil Médico*, December 22. A long article by Gillet in the *Presse Méd.*, January 22, recommends belladonna in progressively large doses as a simple and valuable symptomatic in whooping cough.

Treatment of Mental Strain.—In cases impossible to treat by the only rational means, removing the cause, in which the mental strain must be kept up, Romme recommends in addition to hydrotherapy and massage, two pills of 1 milligram strychnin arseniate each, and one pill of 8 milligrams zinc phosphid during the day, at breakfast or dinner according as the person retires early or late. This can be kept up during the entire period of intellectual work, suspending it two days each week. If the strain is continuous, the pill can be taken from time to time whenever especially fatigued, or a strychnin pill every other day and a zinc pill every fourth day. Make the latter according to the formula: zinc phosphid, 0.80 centigrams; pulv. gum arabic, 1 gram; pulv. licorice, 3 grams; honey q.s. to make 100 pills. Coat with silver and keep dry, sheltered from the light. Renew every month.—*Presse Méd.*

The Improved Technique in Trephining now possible with Gigli's wire saw is the subject of an article by E. Braatz in the *Cbl. f. Chir.* for January 22. He states that it avoids all jar, and the piece cut out fits in again with remarkable precision. The edges can be cut straight or slanting as desired. He has invented an instrument to drill the preliminary holes on the principle of an augur, but very short, 15 cm. the total length, which ensures great delicacy and accuracy. The U-shaped part usually grasped by the hand is made too narrow to admit the hand. A projecting handle rides loose upon it at right angles to the shaft, and by this the drill is turned, while the pressure is from the other hand above. He uses an ordinary drill changing to a fraise as the bone is nearly penetrated. He inserts the saw with a sound curved to correspond to the distance between the holes; 93 degrees of an arc of 8 cm. diameter for a distance of 4 cm.; 140 degrees of an arc of 5.3 cm. for a distance of 3 cm. and a half circle 2.5 cm. in diameter for a distance of 2 cm. The drill-holes serve for drainage afterward. *Vide* JOURNAL, Vol. xxix, page 504. Gigli is pronounced Jeel-yee.

Methyl-Blue in Malaria.—J. P. Cardamatis of Athens reports that he has administered methyl blue in 275 cases of malarial fever during the last three years, and has been amazed at its prompt and effective action. He considers its therapeutic value in malarial fever far superior to that of quinin and "can not praise it enough." Its efficacy was especially noticeable in persons so saturated with quinin that they had ceased to react, and in those in which quinin was counterindicated. The results were undeniably successful in 93 per cent. of the total cases of acute and chronic malarial fever treated, and it even confers immunity; only 15 per cent. of the persons continuing to live in extremely malarial districts had relapses within a year. The result was negative in 7 per cent. The only inconveniences were the staining of the mouth and clothing when the liquid form was used (infants). He gives four tablets a day, one every two hours. The daily dose for adults is 10 to 12 grains; for older children 8 grains, for younger children 6 grains, infants 1 to 2 grains. It is administered ten to fifteen days and then suspended for two or three days and a purgative given, resuming for three or four and then suspending for three to eight days and resumed at intervals, ensuring a total of seventeen days in twenty-two for acute or chronic quotidian, in which the fever disappears in the first five days, sixteen days in forty-eight when the fever reappears in the first five days and twenty-eight in sixty days in the tertian and quartan form.—*Deutsche Med. Woch.*, February 3.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance $5.00
Foreign Postage 1.75
Single Copies . . . . . 10 Cents.

In requesting change of address, give *old* as well as new location.
Subscriptions may begin at any time and be sent to
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 61 Market Street (Occidental Buildings), Chicago, Illinois.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Henry P. Newman, 100 Washington St., Chicago, Ill., sending him a certificate or statement that the applicant is in good standing in his own Society, signed by the President and Secretary of said Society. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership.

On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 61 Market Street (Occidental Buildings), Chicago.

Original communications are only received with the understanding that they are exclusively contributed to this JOURNAL.

SATURDAY, MARCH 5, 1898.

APYRETIC TYPHOID FEVER.

It is an interesting fact in clinical medicine that every infectious disease which attacks human beings in the vast majority of cases results in producing a more or less constant rise in bodily temperature. One would suppose that the poisons of one infection might irritate the heat centers in such a way as to cause an increased generation of heat, while other poisons would depress them to such an extent, or would so seriously interfere with oxidation processes in the body, that instead of the temperature rising above normal it would fall below it. It is true that in a certain number of cases where the infection is particularly malignant, and where the individual seems peculiarly susceptible, fall of temperature does follow the infection, the patient immediately passing into a condition of profound toxemia with symptoms resembling collapse, but these instances are so rare as to be practically curiosities in medical literature. It is interesting to note, therefore, that from time to time, as our observation of diseases becomes more accurate and our methods of diagnosis more complete, physicians are recording instances in which grave infectious diseases have been attended, if not by a fall in temperature, at least by no pyrexia. Originally, fever was perhaps the most important diagnostic point in connection with the case, but at the present time we regard it merely as a symptom of some prominence, possessing certain indications, and rely upon other physical signs more objective in character before we make a positive diagnosis.

Many years ago a very large number of cases of true typhoid fever were not recognized as such and were classified under the head of gastric fever, or simple continued fever. These cases are today properly recognized and add very largely to the number of cases of typhoid fever which are reported. Some years ago FISK of Denver, reported a series of cases of typhoid fever, in which the temperature ran a typical but nevertheless apyrexial course, and similar instances have been seen in the East, recorded by clinicians, though none of them so far as we are aware have reported them as thoroughly as has Dr. FISK. In this connection it is interesting to note a recent paper by WEILL and PEARY, published in *La Province Médicale* for November, 1897. In this case the temperature was normal or subnormal, practically throughout the entire course of the disease, but the pathologic process was accompanied by the characteristic symptoms of typhoid fever so undoubtedly that no question as to the diagnosis could be admitted. The symptoms began with the usual vague manifestations of general wretchedness, with great fatigue upon attempting any exertion. There was loss of appetite, frontal headache, restless sleep, vertigo, nausea, but there was no epistaxis. There was also pain throughout the limbs. The tongue was characteristic, red on the edges and rough in the center. Constipation was present. There were no rose spots early in the attack. The abdominal walls were soft and pliable. The lungs were normal, there was a slight murmur at the base of the heart. The pulse was quick and small and easily accelerated by excitement. Vomiting was sometimes present, and a restless sleep finally became complete insomnia. Several days later in the case abundant epistaxis came on in the night. There was diarrhea of a non-fetid character, which was persistent and vomiting became a persistent symptom.

WEILL and PEARY go over the case very carefully, present its temperature chart, exclude anemia and other causes of low fever and conclude that this was another instance of apyretic typhoid.

QUANTITATIVE HEREDITY.

The usual views of hereditary transmission of qualities from parent to child have been contentedly vague as to the exact amount derived from either parent or grandparent or more remote ancestor. It has been probably assumed by most of those who have given any thought to the subject that such calculations were impossible or that at least that the laws governing such transmission depended upon so many and so different conditions as yet, and probably long to be, unknown to us, that it was useless to try to seek them out. We know as physicians that certain pathologic heredities are more or less special to one or the other sex, that in some prominent instances a feature or cast of countenance, mental or moral trait seem to be a family characteristic, while in others there is apparently nothing to indicate descent

in the way of family traits or features. Once in a while a known ancestral character makes its appearance, having skipped one or more generations, and to this we give the name of atavism and leave further explanation as useless or impracticable. The hitherto recognized laws of heredity are few and hardly touch the question on its quantitative side; the distribution of ancestral traits has been considered to be too capricious as a rule to afford the data for generalizations in this particular direction, at least in the human species, where all matters involving faculty or capacity are so much more complex than in the lower animals.

Several years ago Mr. FRANCIS GALTON, one of the most active investigators of this subject, published a theory of heredity that takes account especially of the respective portion due to each parent and ancestor. Counting the total of the organism as 100, he held that one-half, or 50 per cent., is derived from the progenitors, one-half of this from each parent. They in turn derive half their traits and features from their respective parents, and so on to the most distant ancestral relative. Any individual may therefore be reckoned as owing one-quarter of his peculiarities to each of his parents, and through them one-sixteenth to each of his four grandparents, one-sixty-fourth to each of his eight great-grandparents, and so on in a continually decreasing ratio to his remotest forefathers. In a more recent publication GALTON has given facts confirming this theory which were derived from a study of a well-known breed of dogs showing certain markings and peculiarities that facilitated this particular line of inquiry, and it may perhaps be accepted as a fairly probable working hypothesis.

What is true of the lower animals is also within certain limits applicable to the higher ones and from this point of view GALTON'S theory is of interest to us as physicians. It will help us to a provisional estimate at least of the possibilities and dangers of intermarriage, of the risks of inherited disease, etc. One consideration, however, must not be overlooked; it must not be assumed, to use a somewhat vulgar comparision, that the cards are thoroughly shuffled at each re-deal, that the transmission of qualities is general rather than special in every individual case. The inheritance transmitted from parent to child may be in large part that which the former received from his ancestor; this is the basal fact of evolution and of the perpetuation of species as well. We see it in the family features transmitted through many generations, of which the Hapsburg lip and the Bourbon nose are historic examples. This fact, however, is perfectly compatible with GALTON'S theory of heredity, though it would probably so complicate the observations that it might sometimes make it the more difficult of confirmation in carrying out the investigation in the higher animals and especially in applying the theory to the heredity of human faculties and traits. It would be of especial interest could we also find some law that governs the apparently so capricious selection of qualities in inheritance, irrespective of the amount derived from either parent, but that is a problem for the future.

GALTON'S theory, if it is capable of being sufficiently demonstrated as a fact, is certainly a valuable addition to our resources for the study of heredity, not only in a general scientific point of view, but also in all appearance and probability in its special application to the facts of hereditary disease.

MALARIA INFECTION.

Perhaps one of the most remarkable facts presenting itself to the student of medical literature, is the swing of the pendulum, as it may be called, upon almost every topic pertaining to the science. This seems to be especially true concerning those subjects of which we seemed or seem to have more than an average knowledge. Histories of medicine teem with examples. The controversies of pathologists as to the formation of infarcts, the etiology of tumors, the changes taking place in inflammatory processes are familiar instances.

To discuss a subject of somewhat more recent date: if there were one disease upon which we could place our scientific finger and say, "It is," or "It is not," that disease is malarial fever. The intermittents were reveled in by our laboratory savants as mere child's play, while every dabster at the microscope was surprised and delighted at the fields of tertian and quartan organisms so easily outlined before him. So we thought. But while burying ourselves in the laboratory, carefully and accurately examining the blood of all patients (not those alone suspected of being malaria infected), always finding, if not at first, after repeated examinations, the specific hematozoon of our search, the clinician has been directing his attention into other lines and after a few cursory peeps through the microscope he exclaims, "Behold, I do not see this much-lauded insect; ergo, it is not here. I have made the diagnosis of my patient's trouble by his chills, fever and sweats, his enlarged spleen, and has he not a labial herpes? The clinician has been under the heel of the pathologist and the bacteriologist too long. I will hie me to my den and there indite an epistle entitled, 'Malaria *sans* Plasmodia.'"

In 1881 the researches of LAVERAN gave to the world the statement that malaria was another of the class of infectious diseases; a disease in which the specific organisms were found within the red corpuscles of the blood and upon which they exerted a parasitic action, growing at the expense of their hosts. A new impetus was given to the study of malaria, and incidentally to the blood, and it was soon developed that

the plasmodium, as the organism was called, was found in no other disease. Italian observers, CELLI, GOLGI, MARCHIAFAVA; Prof. KLEBS, and in this country, PEPPER, OSLER, DOCK and others contributed to place the affection upon a firm scientific basis. Three distinct varieties were discovered, the tertian, the quartan and the estivo-autumnal, the difference being in the length of maturation, the size of the different varieties and certain pigmentary changes. One of the most valuable discoveries of recent years has been the pathognomonic sign of the estivo-autumnal, the presence of crescents and ovoids in the blood after the first week. Experts all recognize that almost invariably obscure malarial symptoms occur in this form. The not unusual enormous difficulty in finding the parasite of this variety will be appreciated by all who have had any experience in this kind of blood work. The less direct the symptoms pointing to malaria, the more difficulty is encountered, as a rule, in finding the parasite. All are familiar with the presence of solitary "malarial" (?) symptoms, headache, neuralgia, chilly sensations, perhaps coming on with some approach to periodicity. Think how comparatively few are the plasmodia requisite to produce such a condition, and then turn your mind to the fact that an exceedingly small proportion of this diminution is found in the peripheral blood. Is it any wonder then that even with the best observers and most careful and long-continued searches cases occasionally occur that are barren of results as far as the hematozoon is concerned?

The dictum of THAYER and HEWETSON that the crescent positively indicates estivo-autumnal malaria, was followed by that of OSLER, than whom no one is more qualified to judge, that malaria is always due to the plasmodium, and secondly, that any fever that resisted the action of quinin, always of course properly administered, is not malaria. As the scientific aspect of this disease became more and more worked out, and not every case in which no diagnosis could be made was labeled "a touch of the malaria," that *bête noire* of every true physician, this latter statement has become a recognized law of therapeutics.

Scientifically, in what way is the fever of malaria produced? In the intermittents, by the reaction on the part of the system against the maturation and invasion of an immense number of parasites during a comparatively short space of time. In the remittents, other cycles of growth are completed before the reaction from an immediately preceding cycle has been recovered from. In the continued forms, sporulation and invasion by a small number of parasites is of constant occurrence, but as the number is small the reaction on the part of the economy is not great; hence there are no chills and the fever is comparatively low.

Experiments outside the body have repeatedly demonstrated that the parasite perishes in a weak solution of quinin, as dilute as 1 to 10,000. If absorbed, 0.3 gram of quinin would make of the humoral fluid a solution of several times this strength. The first indication then to be filled in the treatment of malaria is to be sure that our antiperiodic is administered in a form capable of assimilation by the case at hand. This of course entails in not a few instances a consideration of the stomach mucosa. If we administer a drug, which by its presence in the blood results in death to the malarial parasite (if outside the body, why not within?) it naturally follows that non-assimilation will result in non-cure. Would not atrophy of the gastric mucosa result in diminished or non-assimilation of our quinin? In malaria infected districts the inhabitants, whether suffering from the disease or not, are accustomed to take large doses of quinin more or less regularly, and more regularly immense doses of whisky to ward off a possible infection. In reviewing the etiology of atrophic gastritis, what more constant or more potent factor is present than the ingestion of alcohol. Another point: In the West and Southwest especially quinin is not always administered by a regularly qualified physician. The people themselves know the danger that lurks constantly around them and are always drugging themselves for every ailment of all forms and descriptions as "a touch of the malaria." Very good. Now as to the preparation: The bisulphate of quinin in solution? No indeed. What need when the drug companies turn out yearly millions of their little 0.3 gram pills. Now we have coming together these medical bullets and a mucosa, gastric and intestinal, practically useless for purposes of assimilation. It is curious that an occasional case is not reported of intestinal obstruction due to undissolved quinin pills. The practical result that concerns us, however, is that these chronic cases, always estivo-autumnal, by far the hardest to cure, continue to have fever, and we are where we started. The patient has malaria beyond a doubt; he has been saturated with quinin and his fever is still flourishing in a quiet way. Therefore, the statement "that any fever which will not respond to quinin is not malaria," is false. *Q. E. D.* Make sure of one little point, that your quinin has come in contact with the blood stream, and the case is yours. This is not a story of invention. The writer has himself experienced such cases. The thought occurred to him, "Has my quinin been absorbed?" to be immediately followed by the second, "how to be sure that in any given case it is absorbed." Hypodermic injection! The experiment was tried and the battle was with the dictum of Prof. OSLER. This law was laid down five years ago and thousands of physicians all over the land are ready to vouch for its truth. Those of you who are not, examine the blood repeatedly; see if something else will not account for your "touch of malaria," or give hypodermic injections; 0.3 gram of a solution of the bisulphate injected

every four hours in the deep muscles of the back or in the gluteal region, will transfer your patient's blood into a weak quinin solution, in which death of the parasites will occur as fast they are set free in the blood. The pain is no greater than in the giving of any other hypodermic injection, abscesses are no more common, and you are sure that your drug will be taken into the general system.

The burden of all this is that in a recent number of a large eastern medical journal, a lengthy article was published on malaria, which coming from a man of considerable clinical experience, might tend to weaken in the minds of many men who perhaps have now had the best of luck in finding the plasmodium, the real standing of this organism as regards ague infection. To these let it be said that if we know anything of infectious diseases, we know that a specific microorganism is always the cause of the given disease; that it never enters as a causal relation into any other infectious disease.

The article in question takes the stand that the finding of the plasmodium is by no means essential in the diagnosis of malaria. In the classic intermittents, where the cycle of chill, fever and sweat come on at the same time daily, every other day, or every fourth day, that is of course true; the veriest tyro in medicine would without hesitation make the diagnosis correctly in such instances. And it is in these very cases that the finding of the plasmodium is attended with no difficulty. It is in the cases with obscure symptoms, those as mentioned before, that are due usually to infection by the estivo-autumnal parasite, that the diagnosis both clinically and microscopically becomes a matter of doubt. An affirmative therapeutic test in these obscure cases is not sufficient evidence on which to base a diagnosis. Many affections get well of themselves; quinin is often given as a tonic or as a placebo. Would we call all affections that improved or recovered because they happened to be receiving quinin at the time, indeed often in spite of it, of malarial origin?

The distinguished author brings in support of his arguments, that while in pulmonary tuberculosis the finding of the tubercle bacillus in the sputum is of the highest importance, it is by no means of absolute necessity in making the diagnosis; the physical signs will almost invariably be sufficient. Very true, but what physical signs or even symptoms, barring one or two of the latter which might well belong to one or another of a dozen different diseases, do we have in malaria? To make a diagnosis of ague we must in many cases rely entirely on the microscopic examination. We all admit, in cases of pulmonary tuberculosis, the invariable presence in the lungs of the tubercle bacillus, even if we do not find the latter in the sputum. Why not give the plasmodium an equal chance as regards the blood. Some cases of early tuberculosis have no cough or expectoration; hence the sputum is not always accessible for examination. The same can not be pleaded for the blood; it can always be obtained readily. Let not the pendulum swing us again into doubt and obscurity. Let us look upon malaria as an infectious disease, and keeping in mind the nature of this class, allow no one to make his boasts of his great successes in treating "a touch of malaria" without the innocent query, "Did you find the plasmodium in the blood, doctor?"

CONCERNING TUBERCULOUS AORTITIS.

The early opinion that the internal coat of the larger blood vessels of man is immune against tuberculous disease has been abandoned since the well known researches of WEIGERT[1] concerning the origin of general miliary tuberculosis from tuberculous foci in the walls of pulmonary and other veins. It is now generally known that in tuberculous leptomeningitis, for instance, there occurs a marked tuberculous disease of the small arteries.

When the walls of the blood vessels, particularly the larger branches, become tuberculous, then it is due, in the majority of cases, to direct extension of the process from a tuberculous focus in the vicinity of the wall. Independent tuberculous disease of the vessel wall is much rarer; in the majority of the cases it must then be regarded as of hematogenous origin. In the later stages, however, of such foci it is usually impossible to say whether the disease began in the form of a primary tubercle of the intima, that originated from deposition of tubercle bacilli in the blood stream, or whether the disease began as the result of a hematogenous tubercular infection of the vasa vasorum. Examples of both methods of origin have been described quite frequently in the literature.

The veins are much oftener involved in tuberculous disease than are the arteries. Numerous observations of venous tuberculosis, but only a small number of cases of tuberculous disease of the large arteries have been described. In the large branches of the pulmonary arteries MUEGGE,[2] WEIGERT[3] and HERXHEIMER[4] saw tuberculous proliferations projecting into the lumen, which undoubtedly were due to extension from the tuberculous bronchial glands.

Tuberculous proliferations in the aorta belong to the rarer diseases. DITTRICH,[5] KAMEN[6] and SIG[7] have described the extension of tuberculosis from bronchial or posterior mediastinal glands, or from a cavity in the lung, to the aorta, with the production of aneurysm or rupture of that vessel.

Of independent tuberculous disease of the wall of the aorta, not due to extension, there are only a very

[1] Virchow's Archiv. lxxvii and lxxxviii.
[2] Virch. Arch., lxxvi.
[3] Loc. cit.
[4] Virch. Arch., cvii.
[5] Zeitschr. f. Heilk., ix.
[6] Ziegler's Beträge, xvii.
[7] Inauguration Dissert., 1896.

few cases. ZAHN [8] describes a case of multiple nodules in the aorta and the iliac arteries in a tuberculous individual with general miliary tuberculosis. While the exact nature of this case, which occurred before the time of discovery of the tubercle bacillus, has not been established, there seems no doubt but that it concerned a tuberculous proliferation. At any rate, that is the view which STROEBE [9] has of the case. WEIGERT [5] has also described tubercles in the aorta, and refers to some similar findings of MARCHAND and HEUBER. MARCHAND [10] states that sometimes in miliary tuberculosis one can find small tuberculous caseous nodules on the intima of the aorta, which seem frequently directly due to the implantation from the blood stream. These nodules are, therefore, very much like the tubercles not so very rarely observed upon the endocardium in miliary tuberculosis. HANOT and LEVI [11] saw a larger tuberculous mass, with bacilli and giant cells, underneath the endothelium of the intima of the thoracic aorta in a man 61 years old, who died from miliary tuberculosis.

Very recently STROEBE has described an observation made on the body of a young man 16 years of age, who died from miliary tuberculosis, which apparently originated in the bronchial glands. There were very numerous miliary and larger tuberculous nodules in almost all of the organs. The heart was normal. In the ascending aorta, 2 cm., above ths sinus of Valsalva, there was a small projection about one-third of an inch in height, which was firmly adherent to the wall of the aorta and covered with some fibrin. Otherwise the aorta was normal, and there were no apparent changes around the outside of the aorta at that point. Microscopically it was found that this nodule consisted of proliferated endothelial cells, with leucocytic accumulation, caseation in places, and fibrinous deposits upon the surfaces. There were no giant cells. The free surface of the nodule had undergone caseation in one or two places. In one place the elastic lamina had been destroyed, and the cells rested directly upon the media. Below the nodule the elastic tissue of the aorta was found to be somewhat loosened and split up. Otherwise the wall of the aorta was normal. The examination of the specimen for tubercle bacilli showed that these were very numerous.

In this case it does not concern a simple miliary tubercle but a larger mass, which in all probability originated as a miliary intimal tubercle. The case very much resembles the one already referred to, which was described by ZAHN as endarteritis verrucosa, inasmuch as it here also concerns an absolutely healthy aorta, without any tuberculous foci, without any disease in the immediate vicinity, and therefore a condition that must be regarded as an independent tuberculous aortitis which developed upon a previously healthy wall. This is interesting because many authors, as for instance MARCHAND, deny the existence of an independent acute verrucose aorititis, of any etiology, corresponding to this usual form of endocarditis. Tuberculous aortitis, as described in this case, may be placed parallel with the cases of valvular endocarditis that occur in phthisic patients. Such endocarditis may occur upon previously healthy valves, as well as upon those previously diseased. The essential change in this aortitis consists in a proliferation of the endothelium, due to the action of the tubercle bacillus; the mode of infection with tubercle bacilli in this case may be reduced to two possibilities. Either the tubercle bacilli were implanted upon the wall of the aorta from the blood stream, or they were brought to the intima by the vasa vasorum in the subintimal layer of connective tissue. Perhaps the first possibility is the more likely one, because a large mass of tubercle bacilli in pure culture was found directly upon the place where the healthy endothelium formerly existed. It is also to be remembered that in the thoracic aorta the loops of the vasa vasorum do not reach entirely to the endothelium, but only to the border of the middle and inner thirds of the media, so that the inner third of the media is avascular under normal conditions.

[8] Virch. Arch., lxxxviii.
[9] Centrbl. f. Path. viii, 1898.
[10] Eulenburg's cyclopedia, ii.
[11] Gaz. méd. de Paris, 1895.

THE WEEK IN CONGRESS.

Last week in Congress there were hearings by the Committee on Interstate and Foreign Commerce, of which Mr. W. P. HEPBURN of Iowa is Chairman. Dr. U. O. B. WINGATE, Chairman of the AMERICAN MEDICAL ASSOCIATION COMMITTEE and Secretary of the Wisconsin State Board of Health, appeared in favor of the SPOONER Bill, as did also Dr. H. B. HORLBECK of Charleston, S. C., Health Officer of that city, and Dr. A. H. DOTY, Health Officer of the City of New York. On the other side appeared the Chief of the Marine-Hospital Service, with some officers, and Dr. DRAKE, a railroad surgeon of Atlanta.

Dr. HORLBECK made the principal speech against the CAFFERY-HEPBURN Bill, and in favor of the SPOONER Bill. The points were such as have been summarized in the account of the Mobile meeting, and were sound and well taken. Congressman MAHON of Pennsylvania also appeared before the Committee in favor of his Bill, which is the one for dividing the country up into sanitary districts, each district to be presided over by a commission. He changed his original Bill so that it would be practically under the control of the Marine-Hospital Service.

In addition to an excellent argument on this question, Dr. DOTY presented a telegram showing that the New York Academy of Medicine had endorsed the SPOONER Bill. It should be remembered that the CAFFERY Bill was introduced in the House by Mr.

HEPBURN, and is known as H. R. 4363. This Bill should be killed. The SPOONER Bill was introduced in the House by Mr. OTJEN, and is known as H. R. 8280. The earnest and active support of every member of the ASSOCIATION who favors the creation of a Commission of Public Health, is imperative. Write to your Member of Congress and Senator immediately, if you have not already done so, urging them to oppose the CAFFERY Bill and favor the SPOONER Bill, which is the bill prepared by the Committee of the ASSOCIATION, endorsed by the American Public Health Association and recommended by sanitarians everywhere, with one or two exceptions. These exceptions are, so far as we are aware, certain publishing organs that have books for sale, and a certain sanitary journal, the editor of which long ago survived his usefulness, and is more an object of pity than of any other sentiment. In some of these interesting articles a fling is taken at the Mobile Convention, because, forsooth, the plans of the bureau at Washington were not endorsed by that Convention. It is stated that the Convention was improperly influenced by gentlemen who were not in the interests of this autocratic bureau. Let us see. The bureau sent two surgeons, one passed assistant surgeon and one assistant surgeon, at public expense to attend this meeting, one surgeon being already on the ground as a resident. Every effort was made to bring the individual members of the Convention to suit the views of the bureau, and a great deal of energetic but misdirected effort to that end was made. That they failed is a matter of history, and now because of that failure the Mobile Convention is "of no particular consequence anyhow." The surgeon who acts as the Chief of the Bureau of Publicity and Promotion for the Marine-Hospital Service will have to write more editorials before he succeeds in convincing the people of the United States that the Mobile Convention was composed of any others than gentlemen who were not only in earnest in the cause they advocated, but were guided by the most patriotic sentiments.

Dr. SAUNDERS deserves great credit for his public spirit and the success of the Convention.

CORRESPONDENCE.

Against the Gallinger Bill.

THE DENVER AND ARAPAHOE MEDICAL SOCIETY,
DENVER, COLO., Feb. 3, 1898.

E. Stuver, M.D.—There is a bill now before the United States Senate, action upon which may be had at any time, the provisions of which are inimical to the interests of the medical profession, and to many commercial interests. It is Senate Bill 1063, Calendar No. 136, entitled "A Bill for the further Prevention of Cruelty to Animals in the District of Columbia." In accordance with the usual custom, the bill was referred to the Committee on the District of Columbia, and favorable action thereupon was unanimously recommended by said committee. On Dec. 15, 1897, Senator Gallinger, according to the *Congressional Record*, announced his intention to bring said bill before the Senate for discussion and action. It would, therefore, appear that action upon it may be expected at any time.

This bill, as is well known, is intended to control and restrict the practice of animal experimentation in the District of Columbia. Its principal supporters are the antivivisectionists. All of the principal National, State, and local medical and scientific societies have already protested against the proposed legislation.

At a meeting of the Denver and Arapahoe Medical Society, held at the Brown Palace Hotel, Jan. 25, 1898, the following resolution was unanimously adopted:

"*Resolved*, That it is the spirit of the medical profession of Denver that a strong protest be made against the passage of Senate Bill 1063, Calendar No. 136, entitled 'A Bill for the further Prevention of Cruelty to Animals in the District of Columbia,' and

"*Resolved, further*, That the President and Secretary of the Society be directed to communicate at once with our honorable Senators urging them to do all in their power to defeat a bill that will do untold injury to the advancement of medical science and to the prevention of disease among mankind and animals."

A committee was also appointed to attend the Stock-Growers' Convention, then in session in this city, with the purpose of interesting them in the defeat of the bill. They met with the most courteous reception, and easily succeeded in securing the passage of appropriate resolutions, a copy of which is herewith enclosed.

It has occurred to some of us that as the protests from medical and scientific societies are already practically unanimous, that next to their renewal, our best move is to interest commercial enterprises, such as the stock-growing interests. If it can be shown to the satisfaction of our Senators and Representatives in Congress, that the opposition to the bill is not confined to a certain clique of professional men, whose opposition thereto might be misinterpreted, but that commercial interests will also be affected by such legislation, their active co-operation for the defeat of the bill will be thereby secured.

Knowing your prominence in Wyoming and your large influence with the varied interests there represented, I write to you to enlist your active co-operation. It is desirable, first, that your Senators be written to, protesting strongly against the proposed legislation. Personal letters will probably be of most value. Protests from medical and scientific societies should also be renewed. In writing, give the number and title of the bill, as above. In addition to this, if you can get the stock-growers and agricultural societies, and such other interests as in your judgment are affected by the bill, to forward official protests, and if you can prevail upon prominent stockmen, who know the Senators personally, to write them personal letters, showing in what way such legislation would be detrimental to their interests, it is my opinion that much good may thereby be done.

I believe our best arguments, from a practical standpoint, consist in showing what great good has been accomplished by the investigations of the Bureau of Animal Industry of the Agricultural Department, in investigating diseases of animals, of ascertaining methods of early diagnosis, for instance, the tuberculin diagnosis of tuberculosis, and in providing remedies therefor, as in the recent valuable remedy for the swine plague. Hoping you may see fit to give us active support,

Yours very truly, G. E. TYLER, M.D., Sec'y.

A Rare Accident in Childbirth.

BUTTE, MONT., Feb. 19, 1898.

To the Editor:—The patient, Mrs. G. H. M., aged 26 years, weight about 125 pounds, of medium height, native of Scotland, was married to her second husband seven months previously. She had twice miscarried, her last pregnancy being three years ago. She was taken in labor at full term on July

8, 1897, in the evening. She was having strong pains. Digital examination revealed only sufficient dilatation to admit point of forefinger. The waters had escaped. The presenting part could not be certainly diagnosed by vaginal touch and she was too tender and nervous for an abdominal palpation sufficiently thorough for a satisfactory diagnosis of presentation and position. The os was very rigid. After watching her for some time I noticed no progress whatever in dilatation and that she was bearing her pains very poorly. In the discharges there was not the faintest trace of blood.

The best treatment which I have ever found for rigid os complicated with threatened nervous exhaustion is some form of opium in large doses. Three tablets, each containing morphia sulphate, gr. ¼; atropin sulphate, gr. 1/150, were given hypodermatically. At 4:30 A.M. the pains were regular and strong and the patient had had a good rest. I found signs of a slight hemorrhage in the bed. Examination revealed a breech presenting in the sacro-left-anterior position. The presenting part had passed entirely out of the uterus and was resting under the pubic arch. The labor made slow but steady progress to a complete and safe delivery of a large male child which soon breathed and cried lustily. There was no perineal laceration. The placenta was delivered in fifteen minutes with vigorous contractions of the uterus. After delivery of the placenta I noticed something protruding from the vulva, which, with very gentle traction, separated from a slight internal attachment when it was discovered to be the os tincæ complete and entire torn off from the cervix. Not a half pint of blood was lost during the whole confinement, notwithstanding this accident. No anesthetic was given. No particular pain was complained of.

Had this complication occurred under powerful uterine action, goaded on by ergotic stimulation, it would have been less wonderful, although such an event I believe to be unheard of. But in this instance the tear took place while the patient was under the sedative and eminently relaxing influence of the morphia and atropin as above. Moreover, it happened without her being, apparently, in the slightest degree conscious of it. Her recovery was quite protracted. No hemorrhage. No odor to lochia. She had no milk for the babe, who has thrived vigorously on the bottle. She developed a phlegmasia dolens of moderate severity on one side and was very weak and feeble for three or four weeks. Her temperature would range from 100 to 103 degrees. Tablets of protonuclein and elixir digitalin seemed the most efficient medication. Milk and stimulants were used freely. She has menstruated regularly since, but more profusely than naturally. The uterus was examined a few weeks ago and found to be granulating nicely around the site of the tear.

J. S. HAMMOND, M.D.

The Humane Society Deal in Fiction.

The following is a copy of a letter addressed by the Humane Society to a well-known Senator:

WASHINGTON, D. C., Feb. 19, 1898.

Dear Sir:—I desire to call your attention to the bill now before Congress, "for the further prevention of cruelty to animals in the District of Columbia," and intended for the humane regulation of the practice of vivisection.

It is not, as has been by some erroneously supposed, an "antivivisection bill," but provides only that experiments upon animals shall be performed only by properly qualified persons; that in experiments calculated to give pain, the animal shall be rendered insensible by anesthetics; and it also provides for the appointment of four inspectors, appointed by the President of the United States, to see that these regulations are complied with and to serve without pay.

Ordinary inoculation experiments are expressly excluded from the operation of this law.

We wish to point out to you that, to the certain knowledge of the Humane Society, there are perpetrated in this country, under the name of scientific research, acts of the most revolting cruelty and barbarity; that the young of both sexes are being trained to these practices; that even in the professions of medicine and surgery, whose devotees should be of all men most humane, they are now being educated by these means to an utter indifference to the infliction of pain and the sacredness of human life; that, to our certain knowledge, this rage for experiment, engendered by its unconstrained exercise upon animals, reacts upon human subjects placed, when ill, at the mercy of persons so trained, and especially upon the sick poor in hospitals, of whose abuse by such experiments there are many known instances.

We know that cruel vivisections have been done in the District of Columbia, though to what extent we can not know, owing to the secrecy with which such experiments are surrounded. We wish, however, to provide against them for the future.

Our opponents in the District claim that they now do nothing to which the bill objects. If their conduct is already in conformity with its provisions, their opposition is absolutely without cause, and they should be glad to forward legislation to prevent the hideous abuses known to exist elsewhere from creeping into our institutions.

Indignation has been expressed that anyone should attempt to put medical and scientific men under the control of law, but we submit that there is no reason why persons of this class should be more exempt from law than merchants or bankers or other classes for whose control special laws are framed.

We call your attention to the enclosed cutting, a synopsis of the report made by Senator Gallinger of the Senate "Committee of the District of Columbia," which reported the bill favorably without one dissenting voice; also to the fact that a petition in favor of this bill has been submitted to Congress of which Senator Gallinger, in presenting it, said that "probably no bill was ever presented to Congress which received the endorsement of so distinguished a list of men and women."

We beg that you will carefully consider and vote for this bill.

[Signed] A. S. PRATT.
For the Humane Society.

The Illinois State Board of Health.

SPRINGFIELD, ILL., Feb. 28, 1898.

The 19th and 20th Annual Reports of this board, to be published very shortly, will contain an official register of all licensed physicians practicing in Illinois. As the reports are sent to every State in the Union, and are largely called for by professional and business men interested, I desire that the register be as correct as possible; hence would ask that you kindly accord me space in your journal to ask that every physician who wishes to have his name and address correctly reported will send the information to us on postal card at once, giving number and date of certificate.

In over 70 per cent. of cases the addresses on file in this office are those originally given when the certificates were issued, and as no additional information has been furnished this office, either by the county clerks or the physicians concerned, many physicians are reported from towns from which they moved several years ago.

J. A. EGAN, M.D., Sec'y.

Bismuth Capsules—A New Application for the X-Ray.

BUFFALO, N. Y., Feb. 21, 1898.

To the Editor:—In your issue of February 19, you quote from a report of Boas and Dorn, in the *Deutsche Med. Woch.*, regarding the use of capsules of bismuth for location of lesions in the alimentary tract. As this is an important matter, in

regard to which priority is, naturally, a matter of interest, will you kindly put on record the following data.

Feb. 9, 1897, I used gelatin capsules containing reduced iron for this general purpose, having had the matter in mind for some months. This experiment was a failure, on account of lack of power of X-ray apparatus, so far as the stomach was concerned, though the capsules could be plainly seen in the mouth. July 13, 1897, this method succeeded with three or four patients, using both iron and bismuth in the capsules. These experiments are more fully reported in *Medicine*, February, 1898. Very truly, A. L. BENEDICT, M.D.

Collective Investigation on the Action of Cold in Pneumonia.

PHILADELPHIA, PA., Feb. 26, 1898.

To the Editor:—My three collective reports already published on local cold applications in the treatment of acute pneumonia give a record of 299 cases so treated, with ten deaths, or a mortality rate of 3.35 per cent.

Being desirous of pursuing this investigation still further, I take the liberty of asking those who have tested this measure to kindly give me the result of their experience. Full credit will be given to each correspondent in the report which I hope to publish soon. Blanks for the report of cases will be cheerfully furnished by me, with postage for return of same, on application. THOMAS J. MAYS, M.D.

1829 Spruce Street.

Concerning Squirrels.

SANTA CLARA, CAL., Feb. 19, 1898.

To the Editor:—I wish to add a few observations and facts, regarding squirrels, gathered about the inhabitants of the trees of southwestern Michigan.

During the breeding season squirrels like other quadrupeds are very apt to fight. During this time the males battle violently. Their mode of battle is to chase each other until a favorable opportunity presents itself for one or the other to dart beneath the flank of his adversary and bite off his testicles. Sometimes both males share the same fate at the same time. The chisel-shaped teeth together with the ability to take a large round object into the mouth of the squirrel, makes it an easy matter for this animal to maim his adversary in this way almost instantly.

Instead of gray or fox squirrels castrating their own male young the credit must more often be given the agile little red squirrel who is the hardest fighter of them all. He is much quicker than his larger brothers of the other varieties and being smaller and shorter than they, can dart under them, perform his operation and escape before they can harm him. However, the red squirrels deprive each other of the testes during the breeding season. The chipmonk does the same thing. There is no mistaking a female squirrel for a castrated male, as the penis of the male is located under the belly instead of in the perineum, as in the cat. More than that, like the dog and the raccoon, the squirrel has a small bone in his penis which I have verified by dissection in an old male squirrel. The testicles of any old male of the squirrel are larger than those of the cat and hang in a pendulous manner. It is not strange that they should be bitten off readily by members of their own kind, when we consider the teeth and habits of feeding, etc.

I will conclude by showing that castration of his adversary is the squirrel's customary mode of warfare. I once captured an old male red squirrel alive and unhurt. I put him in a box with a large male ferret, expecting of course that the ferret would make short work of the squirrel. Instead of that the ferret had a very narrow escape from losing his testicles. It was only by backing into a corner and crouching down hard that he managed to protect himself until I came to his rescue with a stick. The squirrel makes no other attempt to bite or harm his adversary in combat than to castrate him. He is an expert at it too, as the very large number of eunuchs among male squirrels will testify. I have seen them fighting many times. Yours truly, E. H. SMITH, M.D.

How Squirrels Become Eunuchs.

CRAIG COLONY, SONYEA, N. Y., Feb. 22, 1898.

To the Editor:—Relative to the discussion now going on in the JOURNAL on the above subject, let me say that many years ago it was my pleasure to spend several weeks each fall for five successive years in squirrel-hunting in the eastern section of middle Alabama. My daily tramps in the sport were made with an elderly companion, a man of 60 years, who all his life had been an ardent lover of the sport, and who loved nothing better than the daily rambles through the great forests where the tallest trees grew and where gray and red squirrels (the latter also known as the fox squirrel) abounded.

One day I shot a young male and on picking him up was surprised to find the entire scrotal sac missing, with evidence of a recent injury to the parts. I called my companion's attention to it. "Castrated," he promptly replied. "How?" I asked. "By an old male squirrel," he said, and added that he had often found the same thing, and that he felt convinced that it was done by the old males before the young males left the nest, and that he had on more than one occasion found two young castrated squirrels in one nest. On asking what he thought the old male's motive was for doing it, he answered like the born philosopher he was: "I don't know; you had better ask the old male squirrel." Very respectfully,

WM. P. SPRATLING, M.D.

Eunuchism of Squirrels.

ELLICOTT CITY, MD., Feb. 25, 1898.

To the Editor:—The theory has been advanced by many hunters I have met that during the absence of the mother squirrel, the young utilize the male appendages as teats and in their kind effort to produce something that is not there, cause in time an atrophy of the organs. Personally, though I have killed many squirrels, I have never seen a male minus his testicles, due, probably to the fact that I have never searched specimens for their presence or absence, save as I skinned them for use on the table. I very much doubt the theory of the older males castrating the younger ones; there is no reason why this should be done, and betrays more sense than the animal's gray matter or habits would warrant. A study of the incisor teeth of the squirrel would also suggest a difficulty in performing the operation in the clean manner suggested by your correspondents, or in a manner that would render the operation anything but fatal.

Could it not be a congenital absence of the organs, or failure of the organs to descend into the scrotum, in many of the reported cases when they are absent?

SAMUEL J. FORT, M.D.

A Coroner's Perquisite.

ELIZABETH, ILL., Feb. 1, 1898.

To the Editor:—One of your "Selections" in which the London *Lancet* is quoted has no doubt found many readers who will profit thereby. And as the medical profession can do much to dispel erroneous ideas, the writer would continue to call attention to errors in the manner of calling a coroner's attention when his services are needed. In my jurisdiction good judgment is not lacking in freeing a body found suspended, etc. Quoting from the article in the JOURNAL of January 29, p. 263, "If life remains a medical man should be sent for and afterward the police." The sending for a medical man while life still exists may at times be forgotten, hence the necessity

of calling attention to this matter. If a body is found *dead* the finder almost invariably sends for the police, and this officer may or may not send for the coroner. I do not think any good reason can be given for this circumlocution. The police usually search the unfortunate's pockets for letters, money, etc. In this way, before the arrival of the coroner, the lay press often gets sensational information that should not be published, and in this manner a genuine clue is often lost sight of and a police theory hovers in its place. Dr. E. W. Hoeber when coroner of New York City, found it necessary to complain to the chief of police. When the error was pointed out to him he instructed his captains as to the law, and that they must act accordingly and not search the body. It required a second visit on the part of Dr. Hoeber (several months afterward), when it again became apparent that the "chief's" instructions had been forgotten. This searching is clearly the duty of the coroner, for the reason that a coroner in Illinois is obliged to give a bond of $5000 in each county except Cook, where a bond of $15,000 is required, so that letters or moneys found will be safely kept for those to whom they rightfully belong. It should be a sacred trust with coroners to guard private affairs disclosed in letters, etc., from the public when they have no bearing in serving the ends of justice.

When a body is found *dead* there is only one proper way. *Send direct* to the coroner. Any man or woman should assume this authority. Medical men often have an opportunity and should instruct the people (including the police) that they have no right to take charge of or search a body *found dead* unless the coroner gives this authority. A prominent attorney who had become mentally deranged, took his own life in his office. A doctor and an attorney first discovered the dead body and in due time the deputy sheriff telephoned me. Later a night policeman, hearing of the attorney's death by suicide, went to the place and was in the act of making a forced entrance, as the rooms had been locked after the body was discovered. The layman above mentioned insisted that the night police should desist, as the coroner had been notified. No forced entrance was made. It was generally believed that this attorney took his own life because of absolute want. At the inquest this was disproved from the fact that a considerable amount of money was taken from his pockets. The doctor and attorney who found the dead body would have been justified in sending for the coroner *direct*, instead of serving notice through the deputy sheriff. Much more might be written on the abuse of the coroner's office, and when this matter is properly understood and acted on little more will be heard of the "obsolete coroner system.

PHILIP ARNOLD, M.D.

PUBLIC HEALTH.

Individuality a Factor in Birth Rates.—Dr. D. G. Brinton, once editor of the Philadelphia *Medical and Surgical Reporter*, in a recent article in *Science*, after quoting from the *Journal de la Société de Statistique de Paris*, November, 1897, an article by Arsene Dumont regarding the diminished birth rate of New England, gives his own conclusions. He finds the chief cause in the principle of democracy, which contains a toxic principle. The more intense republican civilization, the more acute becomes individualism, or the overpowering desire to live to the best personal advantage and to get all the good there is going, be it in the sphere of intellect or other gratification. But the numeric increase of the race is and must be inversely to the effort of the individual to develop himself personally. There may, however, be a democracy directed by science which can escape this poison. With this cheering but vague intimation the article closes.

The Results of Immunizing Experiments in Hog Cholera.—Voges and Schutz announce that immunity is only secured when the bacteria circulate in the blood, and that killed rothlauf cultures produce immunity as soon as they are inoculated directly into the blood. The immunizing substances comprised in the cultures are contained within the bodies of the bacterial cells. These cells are protected, however, by a wax-like resistant envelope which it is impossible to destroy by the Koch mechanical process, or by any of the known chemic agents, except lye, which destroys the immunizing substance as well. But the action of one or more of the organs of the organism is able to destroy this protecting shell and liberate the anti-bodies within it and thus induce immunity. The germs in the body are thus naturalized by: 1. The opening up of the bacterial shell by the activity of some organ. 2. The destruction of the bacterial protoplasm by the bactericidal protecting substances then liberated and dissolved in the blood serum.—*Deu. Med. Woch.*, February 3.

Antiseptics in the Preservation of Meats.—M. Duprez has recently presented a report to the Board of Health of the Seine, Paris, in which he calls attention to the increasing use of antiseptics by butchers for preserving meat. The product most generally used is olobar, which is nothing but a solution of bisulphate of calcium, containing 99 grams of sulphurous acid to the liter. Riche claims that the use of this compound is daily increasing and it is now extensively used in beer. It is claimed by the manufacturer of olobar that its use is harmless in that it does not cause the meat to undergo any appreciable change. This, however, hardly seems probable when we consider that we submit our staple food stuffs to the influence of agents as active as sulphurous acid and the sulphites; neither does it seem tenable that their action would be limited to the initial products of fermentation so as to absorb them and counteract their efforts. Experiments have demonstrated that a 1 to 8 solution of calcium bisulphite will penetrate very deeply the meat soaked in it and that the normal structure and muscular fiber does not remain the same, hence the refrigerating process alone should be relied upon for the preservation of meats.

Municipalities not liable for Negligence of Boards of Health.—In the case of Gilboy vs. the city of Detroit, it was alleged that the plaintiff kept a boarding-house; that he received a boarder in the usual course of business; that said boarder had been exposed to smallpox at the Merchant's Hotel in the city of Detroit, and that, through the negligence of the Board of Health, said person was permitted to go at large, instead of being confined; that it was the duty of the Board of Health, under the charter and ordinances of the city, to examine the person at the Merchant's Hotel, determine whether she had smallpox, and, if she had, to remove her to a pest-house or hospital; that the person received into the plaintiff's boarding-house was taken down with smallpox while there, and he, in consequence, suffered loss and damage. The facts were not denied, and thus was presented for adjudication, the sole question of whether a municipality is liable for the negligence of officers of the Board of Health in the performance of their duty? The supreme court of Michigan decides it in the negative, December, 1897. It says that counsel for the plaintiff cited no authorities to support their contrary contention, probably for the very good reason that none could be found. The universal rule is, declares the supreme court, that such boards and officers are not acting for private, but for public purposes; they represent the entire State, through the municipality, a political subdivision of the State; and municipalities, in the absence of express statutes fixing liability, are not liable for the negligence of such officers and boards.

Increasing Ophthalmia and Blindness in New Jersey.—The New Jersey State Board of Health has made public the following statement on the above subject: "The increase of blindness in New Jersey is five times more rapid than the increase in

population, and purulent ophthalmia, an infectious and therefore a preventable disease, is believed to cause not less than 30 per cent. of all cases of blindness." This statement is admitted to be based not on any official statistics, since such are not available, but the information comes direct from the members of the medical profession who have been watching the increase of the disease. The State Medical Society of New Jersey, at its meetings in 1893 and 1894, discussed the subject at great length and drafted the bill that is now on the statute books, which is intended to limit the prevalence of the disease. The neglected law makes it compulsory on any attendant, nurse, midwife or relative of an infant that has inflamed, swollen or reddened eyes to report the fact immediately to the local health officer, who shall at once see that the attendance of a physician is secured and the baby taken care of. It is incumbent on health officers to notify all midwives and others who attend upon births, of the terms of the law, and that a penalty by imprisonment or fine or both may be incurred for neglect to report all cases of inflamed eyes.

BOOK NOTICES.

A Text Book on Surgery, General, Operative and Mechanical. By John A. Wyeth, M.D., Professor of Surgery in, and President of the Faculty of New York Policlinic Medical School and Hospital, etc., etc. Third edition, revised and enlarged. pp. 997. New York: D. Appleton & Co., 1898.

The original edition of this work was published in 1886; a second edition in 1890. The following from the author's preface to the third edition gives the scope of the work: "The introductory section is devoted to surgical pathology, subdivided into six chapters, which treat of inflammation, process of repair in various tissues of the body; specific and non-specific urethritis; erysipelas and actinomycosis; glanders, tetanus, malignant edema, hydrophobia, tuberculosis, syphilis, leprosy, diphtheria, typhoid infection, are also embraced in this portion of the work. Chapters 7 and 8 are devoted to surgical dressings, sterilization, asepsis and antisepsis, and anesthesia. In chapters 9 and 10 much attention is given to hemorrhage, wounds, burns, skin-grafting, frost bite, furuncle, carbuncle, ulcers and gangrene. Bandaging is given in chapter 11. Chapter 12 is devoted to amputations. Chapters 13, 14 and 15 deal with lymphatic vessels, glands, veins, arteries, aneurysm and ligation of vessels. Chapters 16 and 17 give the lesions of the bones and joints and various operative measures for their correction. Chapters 18 to 29 inclusive are devoted to regional surgery, and in that portion of this section in which the abdomen is concerned, many improved changes have been made and much new matter added. Chapter 30 takes up deformities and their correction, while the final chapter, 31 is devoted to the subject of tumors."

Wyeth's Surgery has always been a favorite with students and practitioners. While preserving the features that made the former edition popular, the matter has been brought down to date.

Treatise on the Diseases of Women, for the use of Students and Practitioners. By Alexander J. C. SKENE, M.D., LL.D., Professor of Gynecology in Long Island College Hospital, Brooklyn, N. Y., etc., etc. Third edition, revised and enlarged; 290 engravings, and 4 plates in colors; pp: 991. New York: D. Appleton & Co., 1898.

The former editions of this work were issued in 1888 and in 1892. The great strides that have been made in gynecology since the last edition of this work was issued have made it necessary to issue a new one, and the author has conscientiously made a revision which brings it down to date; consequently we find a fuller discussion of vaginal and abdominal hysterectomy than in any former editions, and the latest improved methods of performing these operations given. The control of hemorrhage by compression and electric heat receives much attention, and in a manner which will interest the general as well as the special surgeon. The electric hemostatic forceps devised by Skene as shown in pages 427 and 431, is clearly a great advance over the ligature in the performance of vaginal hysterectomy. The degree of heat is not one which will produce an eschar, but 170 to 190 F., the length of time which the electric hemostatic forceps are applied should be heated, varies from 30 seconds to 2½ minutes, depending upon the thickness of the tissue compressed between the jaws of the forceps. An excess of current for a few seconds before the commencement of its application seems to be necessary. These forceps require less electric energy than the average cautery electrode, but the current from the electric light main can be used, and is preferable as the care and attention necessary to keep a battery in working order are avoided. A "transformer" is necessary.

Twentieth Century Practice; An International Encyclopedia of Modern Medical Science, by Leading Authorities of Europe and America; edited by THOMAS L. STEDMAN, M.D., New York City; in 20 volumes; Vol. 13, "Infectious Diseases;" pp. 621. New York: Wm. Wood & Co., 1898.

The chapters of this volume are by P. Brouardel, M.D., of Paris; Jules Comby, M.D., Paris; Harold C. Ernst, M.D., Boston; Ernest Hart, D.C.L., London; John Wm. Moore, M.D., Dublin; Solomon C. Smith, M.D., London; Victor C. Vaughan, M.D., Ann Arbor, and Lawson Williams, M.D. London.

The articles are as follows: Ptomains, toxins and leucomains; infection and immunity; water-borne diseases; the duration of the period of incubation and infectiousness in the acute specific diseases, smallpox, vaccinia, mumps. In Dr. Comby's article on mumps, he quotes Catrin's observations on Val de Grâce in 1892. He says: "Of ninety-five cases of mumps, which formed the basis of our studies, we obtained positive results in sixty-seven. Thirty-nine out of fifty-six times we obtained pure cultures by puncture of the parotid glands; twice the cultures were impure, and fifteen times no result was obtained. These negatives may be explained by the occasional absence of any fluid in the organ, so that the plates were sown merely with sterilized water contained in the needle. In most cases the amount of fluid extracted did not exceed a few drops. The testicular fluid, on the other hand, almost constantly gave positive results, that is, in twelve out of sixteen experiments the fluid removed from points of localized edema gave a positive result in all cases examined (three), and the same was true in the two cases in which fluid from the swollen knee-joint was examined. In ten out of fifteen examinations of the blood while fever was present, the same microorganisms were found as in the fluid removed from the various organs. We found microbes two, and even three, weeks after apparent recovery from mumps, a fact which serves to explain the rare instances of contagion during convalescence. After a month elapsed our researches were always negative in their results. . . . The organisms found by us were micrococci, usually arranged in pairs, sometimes in fours, and rarely in zooglea masses. These cocci measured from one to one-and a half micromillimeters in diameter; they were mobile, but not markedly so. They were colored readily with the ordinary stains, but unlike streptococci and staphylococci, they did not receive Gram's staining. The bouillon, kept in an oven at 35 degrees C., showed changes at the end of from 20 to 24 hours, and these increased markedly later. Colonies on gelatin plates did not appear until the expiration of 48 hours; they were punctiform, white in color, grew slowly, and liquified also very slowly and tardily. In stab cultures the colonies developed as very minute pearls along the track of the puncture; liquefaction began at the surface and proceeded very slowly. On potato the whitish culture was scarcely apparent, but it was more so on carrot."

Inoculation experiments were unsatisfactory, since no known animal, except perhaps the horse, is susceptible to mumps. In white mice four out of twenty inoculations were followed by

death, and on examination the spleen was enlarged. Four of these inoculations were made in the peritoneum, and in three of them death occurred. In all fatal cases the diplococcus was found in the blood removed from the heart cavity with all the usual precautions. Busquet and Ferré found a similar diplococcus in seventeen cases in the blood taken from the pulp of the finger and lobe of the ear and in the fluid from the parotid gland. Mecran and Walsh also isolated and cultivated this diplococcus in cultures made from the contents of Steno's duct during the height of the disease. Michaelis also found this diplococcus. Notwithstanding these reports, Comby is of opinion that the final experimental proof is wanting, that is, the reproduction of the disease in animals by inoculation.

The American Year-Book of Medicine and Surgery. Being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery drawn from Journals, Monographs and Text-books by the Leading Foreign Authors and Investigators; Collected and Arranged with Critical Editorial Comments by Twenty-seven Authors, under the General Editorial Charge of GEORGE M. GOULD, M.D. Illustrated, pp. 1077. Philadelphia: W. B. Saunders. 1898. Price, cloth, $6.50; half-morocco, $7.50. For sale by subscription.

Dr. Gould says: "The largely increased demand for the 1897 Year-book leaves no doubt as to the usefulness of our work and of appreciation on the part of the profession. These facts have increased the endeavor of all concerned in the preparation of the volume for 1898 to bring it more nearly to our ideal of perfection. With the growing clearness of conception on the part of the editors of the exact nature of the professional need, there has been a corresponding recognition of the necessity of keeping the epitomization within the limits allotted to previous issues. The vast and increasing literature has this year rendered the task of the editors of especial difficulty; but we believe it has been more thoroughly carried out than ever before, despite the protests of most of the editors that any possible sins of omission must be charged to 'insufficient space,' and not to neglect."

This volume has a copious index. No library is complete without Gould's Year-book.

Aids to Aseptic Technique. By A. D. WHITING, M.D., Assistant Surgeon to the German Hospital, Philadelphia. Pp. 157. Philadelphia: J. B. Lippincott Co. 1898. Price $1.00.

The object of this book is to aid those whose duty it is to prepare materials for an operation. It is divided into six admirably written chapters, and will be found very useful for the purposes for which it is intended.

Transactions of the Royal Academy of Medicine of Ireland. Volume X. Edited by JOHN B. STORY, M.D., F.R.C.S., General Secretary; Surgeon to St. Mark's Ophthalmic Hospital, Dublin. Pp. 477. Dublin: Fannin & Co. 1897.

The contents of this volume includes a list of officers, fellows, members, etc., as well as an address by Prof. Wilhelm His upon the Development of the Brain, and the papers and discussions in the section of medicine, section of surgery, section of obstetrics, section of pathology, section of state medicine, section of anatomy and physiology. The number and variety of illustrations in the volume are remarkable, and the papers are of a high order of merit.

Transactions of the American Microscopical Society. Vol. xix. Paper. Pp. 207. Buffalo: 1897.

This volume contains the proceedings of the twentieth annual meeting, held at Toledo, Ohio, Aug. 5, 6 and 7, 1897. The following papers, with numerous colored plates, are noted, among others: "Micro-structural characteristics of steel," "The rotifera of Sandusky Bay," "The comparative histology of the digestive tract," "A comparison of the phagocytic action of leucocytes in amphibia and mammalia," "A comparative study of hair for the medico-legal expert," "A study of the organs of taste," "Development of methods in microscopic technique," "Notes on the isolation of tissue elements," "Dahlia as a stain for bacteria in sections cut by the collodion method," "Two very simple microtomes."

Eleventh Annual Report of the State Board of Health of Ohio for the year ending Oct. 31, 1896. Cloth. Pp. 376. 1897.

This volume contains the general report of the State Board, annual reports of local boards for the year ending Dec. 31, 1896, additions to the library of the State Board, a list of cities and villages having boards of health with name of health officer, a report of infectious diseases for the year ending Jan. 2, 1897, reports of deaths and their causes for year ending Dec. 31, 1896, and an eighty-page appendix covering the proceedings of the seventh annual meeting of the State Board and local boards, held in Columbus, Jan. 21 and 22, 1897.

Transactions of the Medical Society of Virginia. Paper. Pp. 290. Richmond: 1897.

This volume covers the proceedings of the twenty-eighth annual meeting of the Society, held at Hot Springs, Va., Aug. 31 and Sept. 1 and 2, 1897, and contains twenty-two papers presented to the Society, general discussions, obituaries, list of presidents and vice-presidents, with statistic data of value to the physician. An appendix contains a biographic register of Fellows of the Society.

Transactions of the Medical Association of Georgia. Cloth. Pp. 535. Atlanta: 1897.

The volume is on excellent paper and of good typography and workmanship. The contents comprise the proceedings of the forty-eighth annual session, held at Macon, Ga., April, 1897. Among the forty-four papers printed we notice: "Enterocolitis of infancy," "Blue pyoktanin in the treatment of inoperable malignant growths," "Morphin and its effects," "Atropin poisoning," "Eucain, with report of a case," "Dermoid cyst of bladder," "Meddlesome instrumentation in urethral disease."

Sir James Young Simpson. By H. LAING GORDON. New York: Longmans, Green & Co. 1897.

This is the third volume of the series of "Masters of Medicine," and the subject is in every way a worthy one. Sir James Simpson's works have always been read with admiration in America, and the older members of the profession owe much to those unrivaled "Lectures on the Diseases of Women," published by Blanchard and Lea in 1863, which had such a wide circulation here. The enumerated list of titles of his works in the Surgeon-General's "Index Catalogue" is prodigious in number and scope. Dr. Gordon has given us a faithful biography of this remarkable man, and it is one of the most interesting volumes of the series so far printed.

NECROLOGY.

EDWARD CONSTANT SEGUIN, M.D., who died at his home in New York City, February 19, was the only child of the late Edward O. Seguin, M.D., whose brother, father and several relatives of the same name were physicians, chemists, engineers and architects. Born in Paris, France, in 1843, he was brought to America with his father, who in 1850 took up his residence in Cleveland, Ohio, at which city and in Portsmouth, of the same State, he received both a public and high school education. In 1861, then living at Mount Vernon, N. Y., he began the study of medicine with his father, and after a three years course at the College of Physicians and Surgeons, New York, was graduated in 1864. During this time he acted as dresser in the hospital steamship of the United States Sanitary Commission in the Pamunkey and James Rivers and served as a medical cadet of the regular army until 1864. From September, 1864, to June, 1865, he was an acting assistant surgeon, U. S. A., and during the last two months an assistant surgeon, U. S. V. Afterward he became a member of the house staff of the New York Hospital for the usual term of

two years. In consequence of the development of pulmonary trouble, he was by courtesy of the then Surgeon-General assigned to New Mexico and there served as post surgeon at Forts Craig and Selden. In the summer of 1869 he returned to New York with his health apparently completely restored. Soon after the opening of the Connecticut Hospital for the Insane, Dr. Seguin was appointed pathologist for the same and so continued for about ten years. The winter of 1869-70 was spent by him in Paris under Brown-Séquard, Charcot, Ranvier and Cornil, but upon his return to New York he took up general practice instead of his intended specialty. From 1871 to 1885 Dr. Seguin was a lecturer on diseases of the spinal cord, and in 1873 founded the Clinic for Nervous Diseases in the College of Physicians and Surgeons, New York. Between 1882 and 1893 he was in Europe several times, but resumed the practice of his specialty whenever he was in New York. His popularity was great and his fees ample. His literary work was limited to monographs of more or less excellence, but compensation was had in the acuteness of his diagnosis and the felicity of his diction. He was a member of many societies in both hemispheres and often spoke with satisfaction of his relations with the various neurologic societies. He leaves a second wife but no children. His death was due to cirrhosis of the liver.

WILLIAM T. ELMORE, M.D., Dartmouth, 1888, died from pneumonia in New York City, February 12, aged 44 years. His birth-place was Montgomery, Ala. He went to New York fifteen years ago.

CONANT SAWYER, M.D., Albany, N. Y., 1865, died at his home in Auburn, N. Y., February 21, after a week's illness from pneumonia. He was physician of Auburn Prison for ten years, having come from Ausable Forks. Besides being a member of several organizations he was identified with the AMERICAN MEDICAL ASSOCIATION and a founder of the New York State Medical Association.

GAMALIEL GILLIS, M.D., N. Y. University Medical College, 1885, of Montague Bridge, Prince Edward Island, Canada, died January 4, aged 45 years.

ENNIS I. GERAGHTY, M.D., formerly a house physician of St. Vincent's Hospital, died at his home in New York, February 18, aged 23 years.

LEWIS FRENCH, M.D., N. Y. University Medical College, 1883, died January 27, at his home in Noroton, Conn., where he was a member of the hospital staff of the Soldiers' Home.

DANIEL CAMPBELL, M.D., died at Saxton's River, Vt., Feb. 3, aged 77 years. He was graduated from the Vermont Medical College at Woodstock in 1842, and from the Berkshire Medical College, Pittsfield, Mass., in 1843. He practiced in Pittsfield, was in Westminster ten years, and since 1854 had lived at Saxton's River. He was a member of the Legislature in 1864, and was a nominee for Congress in the Second District, in 1880.

JOHN S. ISHAM, M.D., Bellevue, N. Y., 1874, died in Cleveland, O., February 10, aged 50 years.——Montague L. Boyd, M.D., Savannah, Ga., of blood poisoning contracted in performing an operation, February 9, aged 48 years.—— D. B. Collins, M.D., St. Peter, Minn., February 14.—T. P. Crutcher, M.D., Nashville, Tenn., February 13, aged 68 years.—— Frederick B. Gould, M.D., Kent, N. Y., February 13, aged 38 years.——John P. Hillegas, M.D., Philadelphia, February 12. ——T. P. McCullough, M.D., Fort Wayne, Ind., February 18, aged 75 years.——Oscar A. Menocal, M.D., Washington, D.C., February 9, aged 28 years.——Hiram L. Spicer, M.D., Baltimore, Md., February 12.——Jonathan S. Whitaker, M.D., Millville, N. J., February 14, aged 75 years.——Lewis R. Hurlbutt, M.D., Yale, 1850, of Stamford, Conn., February 14, aged 78 years.——James Wilkinson, M.D., College of Physicians and Surgeons, N. Y., 1858, died in Jersey City, N. J., February 17, aged 61 years.——Heinrich N. Hahn, M.D., St. Paul, Minn., February 22. He was graduated from the University of Marburg, Germany, in 1874.——Sylvester C. Ham, M.D., Auburn, Ill., February 22, aged 46 years.

JOHN G. TRUAX (*vide* JOURNAL, p. 507).

WHEREAS, We the members of the Medical Board of the Harlem Hospital, have learned with deep regret of the death of our late associate, Dr. John G. Truax,

Resolved, That we record our recognition of the value of his services in the establishment, due largely to his untiring energy, of the Harlem Hospital, the organization of which was his work.

Resolved, That we hereby desire to express our appreciation of his manliness and decision of character, his high sense of professional honor, and the zeal and ability shown by him in the practice of the profession which he loved.

Resolved, That a copy of these resolutions be sent for publication to the *New York Medical Record*, *New York Medical Journal*, to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and to the widow of Dr. Truax.

[Signed] J. T. JOSEPH BIRD, M.D., Sec.

DEATHS IN THE PROFESSION ABROAD.—Dr. P. di Pietra Santa, aged 77. A notable and picturesque figure in Paris, founder of the Société d'Hygiène and editor of its journal, prominent in every phase of the progress of hygiene, author of numerous studies on climatology, influence of warm climates on tuberculosis, etc., and one of the earliest partisans of cremation. "Born in Corsica, he was related to Bonaparte, and when he first settled in Paris was physician and secretary to the old king, Jerome of Westphalia, and later to his son, Prince Napoleon." He had many friends in America and the *Journal d'Hygiène*, under his able editorship, was greatly respected and admired.

SOCIETY NEWS.

Chicago Medical Society.—A clinical meeting was held Feb. 23, 1898, with the President, Dr. Fernand Henrotin, in the Chair. Dr. Daniel R. Brower exhibited four cases of exophthalmic goiter in a family of six children. The four children had tachycardia, pulsating goiters, and one of them marked exophthalmus. Dr. G. W. Johnson exhibited a case of tabes dorsalis with Charcot's ankle joint. The man was 45 years of age, single, and a sail-maker by occupation. He gave a history of having had a chancre sixteen years ago, also of a second syphilitic infection seven years ago. He also exhibited a case of syringomyelia. The patient was a Swede, 39 years of age, unmarried, and a molder by occupation. Dr. L. D. Baldwin showed a Chinaman with an ulcerative syphilitic process on the face. Dr. N. Senn presented two cases in which transcapular amputation was performed for periosteal sarcoma. Dr. E. E. Ochsner showed a case of compound comminuted fracture of patella because of the good result obtained by the use of chromicized catgut sutures. Dr. Moreau R. Brown exhibited an apparatus for washing instruments and heating sprays. Dr. Elbert Wing showed specimens from a case of intussusception. Dr. A. J. Ochsner showed a specimen illustrating the condition of appendicitis obliterans. He also exhibited multiple fibroids of the uterus. Dr. F. E. Chandler exhibited a monstrosity.

Illinois State Medical Society.—The forty-eighth annual meeting will be held in Galesburg, May 17, 18 and 19, 1898. The preliminary program announces addresses by Drs. J. H. Etheridge and N. Senn of Chicago, and J. W. Pettit of Ottawa. The following papers are also announced:

"Malnutrition in Infants," Frank P. Norbury of Jacksonville; "Infantile Scurvy," Isaac A. Abt of Chicago; "Tumor of Lung," Frank Billings of Chicago; "Diagnosis of Pleurisy with Effusion," Jas. B. Herrick of Chicago; "Etiology and Pathology of Pleurisy with Effusion," Ludvig Hektoen of Chicago; "Treatment of Pleurisy with Effusion," T. J. Pitner of Jacksonville and L. T. Taylor of Springfield; "Case of Patent Ductus Botalli," Frank S. Johnson of Chicago; "Chelidonium Majus in Inoperable Carcinoma," C. C. Hunt of Dixon; "Acute Tonsillitis," P. C. Thompson of Jacksonville; "The Presence of the Smegma Bacillus in the Urine and its Staining Qualities," J. L. Miller of Chicago; "Case of Brain

Disease," W. M. Friend of Sumner; "A Positive Antidote for Strychnia," L. R. Ryan of Galesburg; "Epileptics," J. B. Maxwell of Mt. Carmel; "Remarks on the Treatment of Neurasthenia," Hugh T. Patrick of Chicago; "Diabetic Gangrene," N. S. Davis, Jr., of Chicago; "Significance of the Diastolic Murmur in Diagnosis of Aortic Insufficiency," B. W. Sippy of Chicago; "A Pharmacologic Study of the Action of Digitalis on the Mammalian Heart and Circulation," S. A. Mathews of Chicago; "Modified Milk," J. S. Churchill of Chicago; "Summary of Laws Governing Medical Practice in other States," Julius Kohl of Belleville; "Defects of the Laws of this State Governing Medical Practice," G. N. Kreider of Springfield; "What Should be the Law in this State?" H. N. Moyer of Chicago; "Advantages of Separating the State Board of Health from the Licensing Board," L. R. Ryan of Galesburg; "Summary of Laws Governing Expert Testimony in other States and Countries," J. O. DeCourcy of St. Libory; "Defects of Laws Governing Expert Testimony in this State," Sanger Brown of Chicago and F. P. Norbury of Jacksonville; "The Outlines of a Law that would Remedy the Defect," D. W. Graham of Chicago; "The Legislation Necessary to Promote Better Sanitation Throughout the State," J. A. Egan of Springfield; "Labor in Fat Women," J. B. DeLee of Chicago; "Repair of Bones," H. C. Fairbrother of East St. Louis; "Surgical Treatment of Cavities in Pulm. Tub." H. M. Thomas of Chicago; "Straits of Early Life," J. O. DeCourcy of St. Libory; "A Contribution to the Surgery of Accidental Wounds of the Knee Joint," D. A. K. Steele of Chicago; "Cynovitis; Remarks on Treatment," C. W. Sibley of Fairfield; "Treatment of Minor Surgical Injuries with Especial Reference to Bandaging," J. J. Connor of Pana; "Laminectomy in Pott's Disease," A. H. Ferguson of Chicago; "Urinary Fistulæ," Wm. Cato of Decatur; "Early Operation for Uterine Cancer," F. H. Martin of Chicago; "Congenital Phymosis and Some of its Effects," Ed. C. Lemen of Alton; "A Substitute Operation for Resection in Certain Extensive Injuries to Intestinal Wall," E. C. Dudley of Chicago; "My Name is Appendicitis," Emma B. Standley of Alexis; "Path. Histology of Intestinal Anastomosis," J. Frank of Chicago; "Atrophic Rhinitis," E. T. Dickerman of Chicago; "A Case of Extra-Uterine Pregnancy," O. B. Will of Peoria; "Diagnosis of Pulmonary Cavities with Special Reference to their Surgical Treatment." R. H. Babcock of Chicago; "Surgical Shock," Robert A. Kerr of Peoria; "Interesting Cases of Mastoid Disease," Norval H. Pierce of Chicago; "Report of Cases of Cæsarean Section," A. McDiarmid of Chicago; "Toxemia of Pregnancy," J. T. McAnally of Carbondale; and papers by W. R. McLaughlin of Jacksonville and A. C. Corr of Carlinville.

American Laryngological, Rhinological and Otological Society.—The meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society will be held in Atlanta, Ga., March 28, 1898.

Preliminary Program: Address by the Chairman, A. W. Calhoun of Atlanta; "Labyrinthine Vertigo," John Hey Williams of Asheville, N. C.; "Chromatic Audition," J. L. Minor of Memphis; "Report of a Case of Hemorrhage after the Removal of Adenoid Vegetations," Ross P. Cox of Rome, Ga.; "Hypertrophy of the Lingual Tonsil, its Symptoms and its Treatment," D. A. Kuyk of Richmond, Va.; "Thrombosis of the Lateral Sinus, Dependent upon Suppurative Otitis Media," E. B. Dench of New York; "Othematoma and Perichondritis of the Auricle," John O. McReynolds of Dallas, Texas; "Tracheotomy for Foreign Bodies in the Air-passages, Report of Twenty-seven Successful Cases," Willis F. Westmoreland of Atlanta; "Empyema of the Accessory Nasal Cavities," Ruffin A. Wright of Mobile; "The Influence on Development of the Nervous System of the Child by Adenoid Vegetations in the Nasopharynx," E. P. Sale of Memphis; "Nasal Fibromata, with Report of Cases," L. M. Crichton of Atlanta; "A Form of Primary Nasal Diphtheria," E. C. Ellett of Memphis; "The Importance of Examining the Nose in Troublesome Coughs," A. C. Palmer of Richmond, Va.; "Intubation of the Larynx for Membranous Stenosis," Bernard Wollf of Atlanta; "Mouth Breathing," Norburne B. Jenkins of Knoxville, Tenn.; "Mental Disturbance in Turbinate Hypertrophies or Nasal Stenosis," John F. Woodward of Norfolk, Va.; "A Discovery in the Physiology of the Ear," W. F. Cole of Waco, Texas; "Middle Ear Catarrh, Some Original Deductions," Maury B. Stapler of Macon, Ga.; "Ethmoiditis and Report of Case." B. F. Travis of Chattanooga; "Mastoid Inflammation, with a Report of Two Interesting Cases," T. E. Mitchell of Columbus, Ga.; "Mouth Breathing in Children, Particularly as a Result of Adenoids," Arthur G. Hobbs of Atlanta; "The Nasopharynx in Laryngeal Diseases," N. C. Steel of Chattanooga; "Cholesteatoma of the Mastoid Antrum," S. L. Ledbetter of Birmingham, Ala.; "Diseases of the Accessory Sinuses," Alex. W. Stirling of Atlanta; "Clinical Miscellanies from Private Practice," Frank M. Mullins of Fort Worth, Texas; "Empyema of the Accessory Sinuses of the Nose," Frank M. Hanger of Staunton, Va.; "A Good Hemostatic after Nasal Operations," L. B. Grandy of Atlanta; "Hypertrophic Rhinitis and its Treatment," F. J. Hill of Memphis; "The Serum Treatment of Ozena," W. E. Campbell of Atlanta; "Peritonsillar Abscess," Dunbar Roy of Atlanta.

All the hotels have given reduced rates and a large meeting is expected. The profession is cordially invited.

DUNBAR ROY, M.D., Secretary.

NEW INSTRUMENTS.

AN IMPROVED STETHOSCOPE.

BY F. W. MERCER, M.D.
CHICAGO.

In the stethoscope here illustrated an attempt has been made to combine the desirable features of a number now in use. The advantages claimed are increased clearness and distinctness of sounds transmitted; its lightness and the ease by which the whole instrument can be made aseptic. In its construction only thin and hard German silver tubing should be used, the chest piece being of the same material. The bell, or chest piece, differs to a degree from existing forms in having the bifurcation

carried down rather close to the rim and the bell itself made as short as possible. The mouth of the bell has a diameter of 25 mm. and each bifurcation has an internal diameter of 8 mm. The pure gum, antimony tubing connecting the chest piece with the ear tubes should have extra thick walls, with an internal diameter of 8 mm. The metal ear tubes made perfectly smooth within, not having screw points or rivets penetrating, to be 8 mm. internal diameter. The ear tubes are bent with the usual curve, somewhat shortened, and ear tips and all finished entirely in one continuous piece of metal, the margin of the openings turned down and inward, making a perfectly smooth surface to openings of 6 mm. diameter. The tips may, as shown in the drawing, be finished with a thin coating of celluloid. The spring is split longitudinally, giving increased elasticity. All the metal parts are finished in dead black or silver. Soft rubber hoods can be drawn over the mouth of the bell, increasing its size as desired.

MISCELLANY.

Dr. R. Harvey Reed, of Rock Springs, Wyo., has been appointed Surgeon General of the National Guard of that State, with rank of Colonel.

Skiagraphic Photometry.—With a light-proof, black paper box Biesalski determines at a glance the exact time required for radiographic exposure, by gauging the potency of the rays. The box is shaped like a cryptoscope and fits close to the eyes, with an opening at the other end for the Crookes tube. A fluorescent screen is divided into thirty-six spaces and on each

space a certain number of sheets of tin-foil are fastened, also a wire figure showing the number of sheets in each space: 1 for one; 2 for two, etc., up to thirty-six. The potency of the light is thus indicated at a glance by the figure on the last space through which it passes.—*Deu. Med. Woch.*, February 3.

Personal.—Dr. T. D. Crothers of Hartford, Conn., read a paper on "The Medical Side of the Alcoholic Problem" before the Alleghany County Medical Society at Pittsburg, Pa., Feb. 15, 1898.——Dr. John H. Noland of New Haven, Conn., has gone to Cuba to join the insurgents. It is understood that he is associated with two other medical men and they are supplied with a full hospital outfit to give modern aid to the modern patriots.

Vegetables a Fighting Diet.—A writer in the *London Vegetarian* evidently with a bias, says that "99 per cent. of the world's fighting has been done on farinacious food." "The Tipperary peasant of the potatoes and butter-milk days" he pits against "the modern gentleman who gorges himself with murdered cow. The Tipperary man never read bloody-minded novels or cheered patriotic music hall tableaux, but he fought recklessly and wantonly. Your carnivorous gentleman is afraid of everything, including doctors, dogs, disease, death and truth-telling."

Pay of Professional Men in France.—In France, according to *Paris Eclair*, there are from 12,000 to 13,000 doctors, of whom 2500 are found in Paris and about 10,000 in the provinces. Of this number five or six only make incomes of from $40,000 to $50,000 a year, ten to fifteen make from $20,000 to $30,000 a year, 100 make, say, $10,000, 300 make from $3000 to $5000, 800 make from $1500 to $3000, while 1200 earn less than $1500 a year. Coming to the lawyers, of whom there are 3000 in Paris alone, there are not 400 of them who make as much as $2000 a year. A couple of score make incomes of $10,000 a year. It appears that when one of these advocates is made a magistrate his salary is only from $600 to $800 a year, while for the justices of the peace, all fully qualified legal practitioners, the salaries range from $400 to $600 a year. A college professor is paid from $200 to $300 a year, a lycée professor from $700 to $1000 a year. The explanation is that in France there are too many doctors, lawyers, professors and engineers turned out.

Medical Works Not Affirmative Evidence except when used for the cross-examination of experts.—In a case decided by the appellate division of the supreme court in Brooklyn, N. Y., regarding the nature of the injury received by the plaintiff, who claimed that it was progressive in tendency, the counsel was allowed to read from Professor Gross's work the statement concerning the prognosis of nerve contusions. The justice tersely ruled that "the weight of authority on that subject is to the effect that books of inductive science, within which are standard medical works, are not admissible as affirmative evidence. Otherwise, as to those which by the courts are deemed works of exact science. The Northampton tables fall within this class." There is an old case in the superior court, where the plaintiff sued for injuries to a horse, in which it was held that the well-known work called "Youatt on the Horse" was erroneously received in evidence, and in a comparatively recent case the general term of the fourth department reversed a judgment because extracts from medical books were read to the jury. There are not many cases, however, in the law reports of New York State bearing directly on this point, as the consensus of opinion is that there have been too many erroneous dogmas of both law and medicine to establish the justice of any decision.

New Periodicals; A Protest.—Nine new German medical periodicals were announced in the last months of 1897, and medical literature in other countries is almost equally prolific. Von Düring writes to the *Deut. Med. Woch.* protesting against this multiplication of professional organs and a waste of energy time and money, rendering it impossible for any one to keep an intelligent oversight of medical literature. "Each new journal," he says, "contains possibly one or two important articles during the year, but these might just as well have been contributed to some established journal. The rest of the contents: news, abstracts, etc., are found almost simultaneously in all the leading established journals." He therefore appeals to his confrères not to allow themselves to be cajoled into lending their name and prestige or contributing to these sprouting journals. If they will take Punch's advice to those about to marry: "Don't!" they will save the rest of the profession much time and money, while maintaining the dignity of science, which will inevitably be impaired by the "*Vielschreiberei*" necessitated by a host of new periodicals. And the new publications, refused the name and support of prominent members of the profession, would "die a-borning."

Rush Monument Fund.—Dr. William H. Humiston, president of the Ohio State Medical Society, has appointed the following special committee to raise Ohio's promised contribution to the Rush Monument Fund: Drs. William E. Bruner of Cleveland, E. W. Mitchell of Cincinnati, S. S. Halderman of Portsmouth. N. R. Coleman of Columbus, C. N. Smith of Toledo. This divides the State into five natural districts, and it is hoped that funds will promptly be forthcoming to show that Ohio will be second to no other State in honoring the great American physician of a century ago, who was a signer of our Declaration of Independence. Subscription lists will be promptly opened and the profession at large will be appealed to directly. Those who feel disposed to subscribe even a little to this worthy object should at once communicate with the nearest member of the committee. It should be borne in mind that our homeopathic brethren have raised between $75,000 and $100,000 for the monument to Hahnemann in Washington. Shall we publicly say we can not do as much?—*Cleveland Jour. of Med.*, February.

Effects of Modern Projectiles in Warfare.—The *Medical Press and Circular* (January 19), commenting on "Gunshot Injuries in the late Greco-Turkish War," a paper published in the *West London Medical Journal*, by Henry J. Davis, says: "Practically, only three kinds of rifle bullets were employed in the war. The Greeks used the Le Gras French rifle, with a Chassepôt lever action, and the Turks were armed chiefly with the Martini Henri, while some of the Turkish brigades had the German Mauser magazine rifle. But Mr. Davis never came across a single wound in which a Mauser bullet had become lodged. He accounts for this by stating that the terrific velocity of this bullet—it is effective at 4000 yards—is such that it passes through everything, soft parts and bones, and does not remain in the body. In consequence of this the wounds which it inflicts are much less severe than those caused by the Martini bullet, which, on the other hand, usually splinters a bone in all directions. The use of X-rays was found of service in detecting the presence of bullets. . . . In reflecting upon the facts to which attention is drawn in this paper, it would seem fair to assume that modern projectiles tend more to disable a soldier than to kill him; that is to say, he runs more chance of receiving a slight disabling wound than of being killed by a more severe one. Again, in taking into consideration the chances of life after even a severe injury, it should be remembered that these are much greater than has ever been the case before. The resources of modern surgery are such that if a man be not killed outright, the chances for the most part are all in his favor that his life will be saved. However, it would not be possible to make any forecast of the results of the killed and wounded in the next great European war; the probability, perhaps, is that the proportion of wounded would be very high, but this would doubtless largely depend upon how the troops were maneuvered, and the nature of the work which they were called upon to carry out. But with such weapons of precision now forming the 'slaying machines' of modern armies, everyone with humane feelings will earnestly hope that it will be long before the opportunity for testing these machines will arise."

Societies.

The following recent meetings are noted:

Illinois.—Chicago Medical Society, February 23 and March 2.

Iowa.—Scott County Medical Society, Davenport, February 14.

Maryland.—Baltimore County Medical Society, Baltimore, February 17.

Michigan.—Wayne County Medical Society, Detroit, February 17.

Missouri.—St. Louis Medical Society of Missouri, February 26.

Ohio.—Belmont County Medical Society, Bellaire; Lucas County Medical Society, Toledo, February 18; Muskingum County Medical Society, Signal, February 23.

Wisconsin.—Kenosha County Medical Association, Racine, February 18.

Louisville.

Jas. F. W. Ross of Toronto was the guest of Dr. L. S. McMurtry recently. A dinner was given in his honor by his host, to meet a number of the local profession. With the following he has gone to New Orleans for a brief visit: Drs. C. A. L. Reed of Cincinnati; J. M. Mathews, H. Horace Grant, Thos. Hunt Stucky and L. S. McMurtry. While in New Orleans the party will be specially entertained at Tulane University.

Smallpox.—In the southeastern part of the State at Middlesboro, there has been a severe epidemic of smallpox, affecting mostly, however, the negroes and poorer whites. There have been a number of cases and the epidemic does not seem in the least abated. The Secretary of the State Board of Health has submitted a report of a personal observation to the Board and to the Governor. The Board has issued a circular of instructions requesting that everybody be vaccinated at an early day.

Detroit.

At the Detroit Medical and Library Association, February 21, Dr. A. M. Phelps of New York, held a clinic under the auspices of the Association at Harper Hospital before the members of the medical profession of this city, and demonstrated the technique of the Phelp's operation. Three cases of club-foot were treated. The first case was that of talipes varus in a child of 5 years. The second was that of a young lady of 16 years suffering from double talipes equinovarus. She had been operated on four or five times by multiple tenotomies. The tendo Achillis had been cut across at the usual point twice, and a high tenotomy had been made close up to the commencement of that tendon. There were scars on the inner side of the foot showing other tenotomies. The third case was that of a child only two months old with double talipes varus. The doctor laid great stress on the importance of thorough division and open incision. He pointed out that the inner side of the foot was much shorter than the outer side, and advised manipulation of the foot to bring the tendo Achillis upon the stretch and quite tense, then the puncture should be made with a sharp-pointed tenotome and the section completed with a blunt instrument; then with the force required bring the heel on a level, or preferably below the level of the sole of the foot; then put the fascia, the muscles and tendons all upon the stretch and make an incision from a little in front of the internal malleolus obliquely downward, making the division of sufficient length and depth to bring the foot into the normal position. The doctor does not stop at the division of the abductor pollicis, flexor brevis, internal lateral ligament, or even artery and nerve if impossible to avoid. Dr. Phelps claims that while his operation is radical, it is the only operation after which relapses do not occur; that he has not had gangrene or sloughing from any of the 700 and more operations he has performed, and he has operated on patients all the way from a few days old to up to those of 58 years.

At the regular meeting of the Wayne County Medical Society held on the evening of February 24, Dr. J. A. Clark read a paper on "Anomalies of Albuminuria," presenting the theory that not only are there numerous cases of Bright's disease without albuminuria, but that there are examples of cases of albuminuria who even have a few casts in the urine, and are yet free from renal disease. The Doctor cited the histories of several cases in his own practice to bear out his proposition.

Washington.

Report of the Health Officer.—The report of the health officer for the week ended February 19 shows the number of deaths to have been 125, of which number 73 were white and 52 colored. The principal causes of death were: Diseases of the nervous system, 15; circulatory, 14; respiratory, 47. There were 2 fatal cases of diphtheria, 3 of typhoid fever, 2 of whooping cough and 1 from la grippe. At the close of the week there were 45 cases of diphtheria and 42 cases of scarlet fever under treatment.

Medical Society.—At a meeting of the society held on the 21st inst., the Committee on Public Health made a report on "The Water-Supply and Sewerage of Washington and Reclamation of the Anacostia Flats." The meeting was called to order by the president, Dr. S. C. Busey, who gave a résumé of the work done by the society and his Committee of the Board of Trade toward securing legislation for purification of water and sewage disposal; he also referred to the valuable scientific work done by the society in this connection. In closing he said: "All these efforts have been futile and the city remains today the prey to a single preventable disease which has cost its citizens in loss of life and actual outlay in the last ten years more than would have been required to complete the systems of water extension and purification and sewage disposal." Dr. G. W. Johnston, the present chairman of the Committee on Public Health, submitted a partial report of the work done by his committee. He discussed water-supply and filtration from a scientific and financial point of view. Among other things he said: "The Potomac River, above the take-in, is one vast sewer for the reception of all sorts of industrial waste, and the offal and sewage of comparatively large communities. The distance is such that it is to some extent diminishing these dangers. We find that in the past seventeen years 2539 persons died in Washington from typhoid fever, making an average of 145.35 per year." The discussion was made further valuable and instructive by the remarks of Drs. George M. Kober and Kinyoun. The subject was continued for discussion at the next weekly meeting of the society.

Cincinnati.

The Mortality Report for the week shows: Stillbirths, 7; zymotic diseases, 10; phthisis pulmonalis, 14; other constitutional, 13; local, 63; developmental, 7; violence, 5; total, all causes, 112; annual rate per thousand 14.38; preceding week, 122; under one year, 23; between one and five, 10; corresponding week, 1897, 101; 1896, 148; 1895, 128.

The damage suit against Dr. C. D. Palmer as the result of his leaving a part of a broken needle in the abdominal cavity of a woman was last week decided in favor of the Doctor. The defense was that Dr. Palmer exerted every effort to find the broken point of the needle and only gave up the search when the anesthetizer warned him that the patient was in such a condition that it was not safe to further prolong the administration of the anesthetic. The needle, when found by another operator some time after, was completely encysted.

At the Academy of Medicine Dr. B. F. Lyle presented a paper entitled "What Treatment Shall we Adopt for Pulmonary Tuberculosis?" The author reviewed the various methods of treatment and as to the prognosis said that as a general rule patients who improve in weight and whose temperature is never above 100, offer hope of recovery, while in those whose temperature never exceeds 99, we may feel almost positive of success. The author has failed to obtain satisfactory results from either tuberculin or a solution of nuclein, and he claims that the nutrition is the foundation of the reparative process. The indispensable value of the open-air life is shown by

the experiments of Trudeau, who successfully inoculated rabbits with bacillary matter. Some were allowed their freedom and others confined. The former recovered without any trace of the disease remaining while all the latter died. In thirty-eight cloisters in France, of 2099 deaths 1320 were from tuberculosis, a percentage of 62.88. In the Alabama Insane Asylum, 28 per cent. of the whites and 42 per cent. of the blacks succumbed. Of the persons confined the prisons of Austria, 60 per cent. died from tuberculosis, while but 15 per cent. of those living without perished from the same. In Denver, in 1896, sixty-four unimported consumptives who were living in unfavorable hygienic surroundings died. The importance of having the air-passages free and unobstructed was emphasized. The food selected should be rich in nitrogen, hence meats should be the staple article of diet. Alcohol is avoided, as its rapidity of oxidation leads us to suppose that the same criticism might be made of it as of cod-liver oil, viz., that its affinity for oxygen would result in deficient oxidation of the by-products of tissue metamorphosis. In large quantities its use is condemned as positively injurious, as it forms with the hemoglobin of the red blood corpuscles, a compound which takes up and parts with oxygen less readily than normal hemoglobin, thus leading to a general diminution of the metabolism of the body. It also exerts an inhibitory action on the formation and functions of the leucocytes and other corpuscular elements of the blood and tissues. The elimination of alcohol by the lungs also increases the bronchial catarrh; the heart's action is weakened through fatty degeneration; the nervous system is benumbed, and the numerous other functional and pathologic conditions produced antagonistic to the well-being of the patient. Of the medicinal agents usually employed, the author has found creosote of benefit in some cases, when it undoubtedly lessened the cough, diminished the secretion and aided in increasing the general nutrition. Iron, quinin and strychnia (the dose of the latter pushed to the physiologic limit) is recommended, while sponge baths, phenacetin and quinin should be resorted to as antipyretics. Bromid of potash in ten grain doses every two hours will often be found efficacious in controlling the harassing cough. Intratracheal injections have been very satisfactory and the following formula is recommended:

R. Mentholi	3.00
Camphorae	2.00
Ol. eucalypti	3.00
Guaiacoli	0.50
Liq. alboleni.	100.00

About 5 drams or 20 c.c. of this should be used. For troublesome night sweats agaricin in 1-10 grain doses is efficient.

Health Officer Withrow has presented his annual report in which he gives the total number of deaths during the year, 5,565. The annual rate per thousand being 13.7. As a result of the establishment of a city laboratory and more active quarantine and supervision of cases of diphtheria, the mortality has fallen from 23.8 in 1896 to 15.9 in 1897. The public markets have been much improved in their sanitary condition. The number of deaths from tuberculosis, 675, is a decrease of 62 over that of last year and is the lowest mortality of any year since 1878. This reduction is in a large measure due to the wider dissemination among the people of the belief in the contagiousness of the disease and the recent commendable practice of sending all tubercular patients from the Cincinnati Hospital to the branch hospital. The excellent work done in the milk department is detailed at length. A list of the houses in which infectious and contagious diseases are reported is sent each day to the Public Library in order that the books coming from such houses can be properly disinfected. As to the fumigation and disinfection of houses the Trillat autoclave apparatus for the generation of dry formaldehyde gas has been adopted and found the most satisfactory. The number of deaths from typhoid fever is 101, the lowest since 1879. The strongest plea is made by Dr. Withrow for the erection of an isolation hospital for contagious and infectious diseases of children, the boiling and filtering of all water used for cooking or drinking purposes; the instruction of the school teachers in the use of the clinical thermometer and the first symptoms of infectious diseases in order that they may be able to detect cases before they have progressed far enough to compel the child to remain home; the closer supervision of the public dumps, and a greater number of parks or breathing spaces for the poorer classes.

CHANGE OF ADDRESS.

Chase, A. F. From Philadelphia, Pa., to Perryton, Ohio.
Diemert, J. A. From 109 Ontario Street, to cor. St. Clair and Wilson Avenue, Cleveland, Ohio.
Halvarson, K. K. From Minneapolis to Audubon, Minn.
Magivit, L. From 1280 Lincoln Avenue to cor. Southport and Belmont Avenue, Chicago.
Payne, A. F. From 441 North 13th Street to 208 North Sixth Street, Terre Haute, Ind.
Searle, C. H. From 166 North Avenue to 89 Roslyn Place, Chicago, Ill.; Stone, W. C. From 482 Bowen Avenue to 615 56th Place, Chicago, Ill.
Westlake, J. A. From 913 New York Avenue to 515 F. Street, N. W., Washington, D. C.; Woodward, A. P. From 11 Powell to 1220 Sutter, San Francisco, Cal.

LETTERS RECEIVED.

Anderson, Warren E., Pensacola, Fla.; American Therapeutic Co., New York, N. Y.; Atkinson, W. B., Philadelphia, Pa.
Brumbaugh, G. M., Washington, D. C.; Brothers, S. F., New York, N. Y.
Castle & Co., Wilmot, Rochester, N. Y.; Cokenower, J. W., Des Moines, Iowa; Cobb, F. C., Boston, Mass.; Cossitt, W., South Milwaukee, Wis.; Connor, Leartus, Detroit, Mich.; Castleman, A. L., Mereur, Utah.; Collins, G. L., Providence, R. I.
Drake & Mueller, Chicago, Ill.
Earles, W. H., Milwaukee, Wis.
Hare, H. A., (2) Philadelphia, Pa.
Johnston, Collins H., Grand Rapids, Mich.; Jayne, W. A., Denver, Colo.; Johnson & Johnson, New York, N. Y.
Kitzmiller, J. E., Kansas City, Mo.; Klebs, Edwin, Chicago, Ill.
Lamb, D. S., Washington, D. C.
Mastin, C. H., Mobile, Ala.; Mills, H. B., Philadelphia, Pa.; McDaniel, E. D., Coy, Ala.; Mills, Chas. K., Philadelphia, Pa.; McEwen, P. C., Detroit, Mich.; Morehouse, George, Sparta, Ohio; Milliken, Jno. T. & Co., (2) St. Louis, Mo.; May, W. H., Syracuse, N. Y.; Montgomery, E. E., Philadelphia, Pa.
Norwich Pharmacal Co., Norwich, N. Y.
Ohmann-Dumesnil, A. H., (2) St. Louis, Mo.
Porter, D. R., Kansas City, Mo.; Putnam, H. C., Providence, R. I.; Phenique Chemical Co., St. Louis, Mo.; Parkinson, W. B., Logan, Utah.; Pilling, Geo. P. & Son, Philadelphia, Pa.
Reed, S. Harvey, Rock Springs, Wyo.
Sweet, C. L., Boise, Idaho; Sauer, Anton, Tipton, Mo.; Stevens, S., Coloma, Mich.; Sternberg, Geo. M., Washington, D. C.
Tiffin Book Bindery, (2) Tiffin, Ohio; The Welch Grape Juice Co., Watkins, N. Y.
Union Pacific System, St. Louis, Mo.
Vojc, J. H., Oconomowoc, Wis.; Van Houten & Ten Broeck, New York.
White Rock Mineral Spring Co., Waukesha, Wis.; Wescott, C. D. Chicago, Ill.; Waxham, F. E., Denver, Col.; Wedding, S. J., Sulphur Springs, Ky.; Washburn, W. H., Milwaukee, Wis.; Whelan, J. M., Birmingham, Ala.

PAMPHLETS RECEIVED.

Antitoxin Treatment of Tuberculosis; Microscopic Proof of a Curative Process in Tuberculosis, or the Reaction to Tuberculin Evidenced by Blood Changes Hitherto Unrecognized; Favorable Results of Koch's Tuberculin Treatment in Tubercular Affections that are not Pulmonary. By Charles Denison, Denver, Colo. Reprints.
Barber Shop Dangers of the. By Henry A. Robbins, Washington, D. C. Reprinted from Maryland Med. Jour.
Cholera, Arsenization Method of Treating. Senate Document, No. 111, 2d Session 55th Congress.
Coma, Difficulties in Determining the Causes of. By J. T. Eskridge, Denver, Colo. Reprinted from Annual Report of Colo. State Med. Society.
Mushroom Poisoning, Observation on Recent Cases in the District of Columbia. Circular No. 13, U. S. Dep't of Agriculture, Division of Botany.
Lumbar Nephropexy Without Suturing; A New Incision for Arthectomy, Resection and for reduction of Irreducible Dislocation of the Shoulder Joint; A New Method of Nerve Resection for Amputation-Neuroma: Treatment of Chronic Empyema of the Antrum of Highmore. By N. Senn, Chicago. Reprints.
Report of Allegheny County (Pa.) Prison for 1897. Paper. Pp. 30. Pittsburg. 1898.
Report of St. Mary's Hospital, Rochester, Minn., for 1897. Paper. Pp. 24. Illustrated.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from February 19 to 25 1898.

Capt. Paul F. Straub, Asst. Surgeon, ordered to accompany Companies A and G, Fourteenth Infantry, to Skagway, Alaska, and there take station.

First Lieut. John S. Kulp, Asst. Surgeon, ordered to accompany Companies B and H, Fourteenth Infantry, to Dyea, Alaska, and there take station.

Major Henry S. Kilbourne, Surgeon (Madison Bks., New York), is granted leave of absence for two months with permission to go beyond sea, to take effect on or about March 1, 1898.

Capt. Charles B. Ewing, Asst. Surgeon (Jefferson Bks., Mo.), is granted leave of absence for one month, to take effect on or about March 1, 1898.

Major William W. Gray, Surgeon, is relieved from duty at Ft. Apache, Ariz., to take effect upon the expiration of his present leave of absence, and ordered to Ft. Huachuca, Ariz. for duty.

Lieut.-Col. William D. Wolverton, Deputy Surgeon-General, chief surgeon Hdqrs. Dept. of the Columbia, is granted leave of absence for four months with permission to go beyond sea, to take effect on or about March 15, 1898.